NOVEMBER 14, 1936

THE LANCET

Offices: 7, ADAM STREET, ADELPHI, W.C.2.

Telegrams: LANCET, RAND, LONDON. Telephone: TEMPLE BAR 7228 and 7229.

No. XX., OF VOL. II., 1936. LONDON, SATURDAY, NOVEMBER 14, 1936. Pp. 136—Price 1s.
No. 5907. VOL. CCXXXI. Founded 1823. PUBLISHED WEEKLY. Registered as a newspaper. Annual Subscription: Inland £1 2s. Abroad £1 10s.

OXFORD MEDICAL PUBLICATIONS.

SEE PAGE 4

UROLOGY IN GENERAL PRACTICE.
[General Practice Series]
By ALEX. E. ROCHE, M.A., M.D., M.Ch., F.R.C.S.
3 Coloured Plates & 40 Figs. Demy 8vo. 17s. 6d. net; post. 6d.
"Mr. Roche not only knows what the practitioner requires, but manages to supply it in an interesting manner, and in excellent English."—LANCET.

London: H. K. Lewis & Co. Ltd., 136 Gower-street, W.C.1.

ESSENTIALS OF
MODERN MEDICAL TREATMENT.
By VINCENT NORMAN, M.D., M.R.C.P. (Lond.), F.R.C.S. (Edin.), D.P.H. (Lond.).
Foreword by S. WATSON SMITH, M.D., F.R.C.P., Past President, British Medical Association.
A work of ready reference for Practitioners and Students.
260 pp. Demy 8vo. 10s. 6d.
Hutchinson's Scientific & Technical Publications.

SECOND EDITION.
UROLOGY IN WOMEN:
A HANDBOOK OF URINARY DISEASES IN THE FEMALE SEX.
By E. CATHERINE LEWIS, M.S. (Lond.), F.R.C.S. (Eng.), Surgeon to the Royal Free Hospital; Surgeon and Urologist to the South London Hospital for Women.
¶ *"This book should certainly make and keep for itself a place in urological literature."*—LANCET.
Pp. viii + 100. With 4 Coloured Plates and 27 other Illustrations. Price 6s.; postage 5d.; abroad 9d.
Baillière, Tindall & Cox, 7 & 8, Henrietta-street, London, W.C.2.

JUST PUBLISHED. 129 Illustrations (10 Coloured). 12s. 6d. net; postage 6d.
DISEASES OF THE TESTICLE.
By HAMILTON BAILEY, F.R.C.S.
London: H. K. Lewis & Co. Ltd., 136 Gower-street, W.C.1.

FRACTURES.
By MEURICE SINCLAIR, C.M.G., M.B., CH.B. (EDIN.).
With an Introduction by Sir ROBERT JONES, Bt., F.R.C.S.
Pp. 550. 337 X ray photographs, photographs and diagrams. 24s. net.
Constable & Co. Ltd., London.

DISEASES OF THE THYROID GLAND
WITH SPECIAL REFERENCE TO THYROTOXICOSIS.
By CECIL A. JOLL, M.S., B.Sc., F.R.C.S. (Eng.).
Crown 4to. Fully Illustrated. £3 3s. net.
Revista de Libros: "This book is the best clinical treatise which we possess to-day on the pathology of the thyroid. . . . The excellence of the text is greatly enhanced by the illustrations."
William Heinemann (Medical Books) Ltd., 99, Great Russell-street, London, W.C.1.

IMPORTANT NEW EDITIONS

SAVILL'S CLINICAL MEDICINE
TENTH EDITION. FULLY REVISED.
This original and well-trusted manual approaches disease—like the physician at the bedside—through symptomatology.
xxviii + 1113 pages, 171 illustrations. 28s. net.

FOOD and the PRINCIPLES OF DIETETICS
By Dr. ROBERT HUTCHISON and [illegible]
Eighth Edition. xxviii + 634 pages. Fully revised. 21s. net.

Descr. folders from E. Arnold & Co., 41-43, Maddox St. W.1

NUTRITIONAL FACTORS IN DISEASE.
By
WILLIAM ROBERT FEARON,
M.B., Sc.D., F.I.C.
Demy 8vo. 7s. 6d. net.
A survey of conditions directly or indirectly related to deficiency, excess and unbalance of the components of the modern dietary.
Wm. Heinemann (Medical Books) Ltd.
99, Great Russell-street, London, W.C.1.

DIAGNOSIS OF SOME DELUSIONAL INSANITY TYPES IN GENERAL PRACTICE.
By EDWIN HOPEWELL-ASH, M.D.
John Bale, Sons and Danielsson. Price 2s. 6d.

AURAL THERAPY IN RELATION TO DEAFNESS. (2nd EDITION).
By
Prof. D. F. FRASER-HARRIS, M.D., D.SC., B.SC. (LOND.), F.R.S.E.
SIR JAMES PURVES-STEWART, K.C.M.G., C.B., M.D. (Consulting Physician to the Westminster Hospital), says: "I cordially commend this excellent study to the attention of medical colleagues, so that they may prescribe for their deaf patients suitable and efficient corrective apparatus for individual auditory defects."
7/6 Post free.
THE STERLING MEDICAL PUBLISHING CO.,
81/3, Knightrider-street, London, E.C.4.

FOURTH EDITION. Completely revised. 10s. 6d. net.
TREATMENT OF DISEASES OF THE SKIN
By KNOWSLEY SIBLEY, M.A., M.D., B.Ch. (Camb.).
London: Edward Arnold & Co., 41 and 43, Maddox-street, W.1.

2nd Ed., fully revised, in 1 Vol., 854 pp. 811 Illus.
EMERGENCY SURGERY. 50s. net; postage 8d.
By HAMILTON BAILEY, F.R.C.S.
BRISTOL: JOHN WRIGHT & SONS LTD. LONDON: SIMPKIN.

The Nation's Health ★ *Five New Books*

NEW (5th) EDITION. 17 Illustrations
A SYNOPSIS OF HYGIENE 21s.
W. WILSON JAMESON, M.D., F.R.C.P., D.P.H., Professor of Public Health, London University; By and G. S. PARKINSON, D.S.O., D.P.H., Lt.-Col. R.A.M.C. (Retd.), Assistant Director of Public Health Division, London School of Hygiene and Tropical Medicine.

DISEASES OF INFANCY AND CHILDHOOD
By WILFRID SHELDON, M.D., F.R.C.P. 137 Illustrations. 21s.

STARLING'S PRINCIPLES OF HUMAN PHYSIOLOGY
New (7th) Edition. Revised by C. LOVATT EVANS, D.Sc., F.R.C.P., F.R.S. 554 Illustrations, 6 in Colour. 24s.

RECENT ADVANCES IN ALLERGY
(Asthma, Hay-Fever, Eczema, Migraine, etc. etc.).
By G. W. BRAY, M.B., Ch.M. *New (3rd) Edition.*
107 Illustrations, including 4 Coloured Plates. 15s.

THE RELIEF OF PAIN—
A Handbook of Modern Analgesia
By HAROLD BALME, M.D., F.R.C.S. 12s. 6d.

J. & A. CHURCHILL Ltd., 104 Gloucester Place, LONDON W.1

CALCIDRINE SYRUP

(ABBOTT)

The expectorant action of calcium iodide, the decongesting action of ephedrine hydrochloride, and the sedative and antispasmodic action of Nembutal and codeine are combined in a safe, efficient, and palatable cough syrup.

CALCIDRINE SYRUP

Samples sent to physicians upon request

ABBOTT LABORATORIES LTD., 52a Wigmore Street, London, W.1

ELIXIR

Bromo - Valerianate

GABAIL

exerts a profound influence on the exhausting sweatings and flushings, the nervous irritation and depression, mental excitability, restlessness, and 'anxiety neuroses' associated with the

MENOPAUSE

Dose: One tablespoonful twice or thrice daily.

Supplied in bottles of 187 c.c.

Literature and Samples on request from:—

THE ANGLO-FRENCH DRUG CO. LTD.
11 & 12, Guilford Street, LONDON, W.C.1

Valentine's Meat-Juice

For **Quieting** the **Irritable Stomach**, for **Aiding** the **Digestion** and for **Sustaining** and **Strengthening, Valentine's Meat-Juice** is **Extensively Employed** in the treatment of

Phthisis.

Dr. Saturnino Garcia Hurtado, *Physician Rubio Institute and Municipal Asylum, Madrid, Spain:* "In cases of Consumption, General Debility, etc., VALENTINE'S MEAT-JUICE is most beneficial. I have sometimes noticed that the hemorrhages which occur in hemorrhagic diseases are apt to cease after the administration of VALENTINE'S MEAT-JUICE, which indicates that it acts as a tonic on the nervous system, which is worthy of note."

Dr. Vires, *Adjunct Professor, University of Montpellier, France:* "I have used VALENTINE'S MEAT-JUICE with Tuberculosis Patients and with convalescents from Infectious Diseases, Typhoid Fever, Pneumonia, &c., and observed that my patients derived from its use very marked benefit which could be quickly noticed."

For Sale by European and American Chemists and Druggists.

VALENTINE'S MEAT-JUICE COMPANY,

A 10 **RICHMOND, VIRGINIA, U. S. A.**

NOVEMBER 14, 1936

THE LANCET

A JOURNAL OF BRITISH AND FOREIGN MEDICINE, SURGERY, OBSTETRICS, PHYSIOLOGY, CHEMISTRY, PHARMACOLOGY, PUBLIC HEALTH, AND NEWS

No. 5907 LONDON: SATURDAY, NOVEMBER 14, 1936 CCXXXI

CONTENTS

THE WHOLE OF THE LITERARY MATTER IN THE LANCET IS COPYRIGHT

ADDRESSES AND ORIGINAL ARTICLES

Death in Addison's Disease (Functional Renal Failure). By Prof. C. JIMENEZ-DIAZ, M.D.—(*With Charts*) 1135

Some Tumours and Ulcers of the Palate and Fauces. By WALTER HOWARTH, F.R.C.S. ... 1139

A New Method of Treatment in Hæmophilia. By W. A. TIMPERLEY, M.B., A. E. NAISH, F.R.C.P., and Prof. G. A. CLARK, M.D.—(*With Chart*) ... 1142

Anal Fissure. By J. W. RIDDOCH, F.R.C.S. —(*Illustrated*) 1150

CLINICAL AND LABORATORY NOTES

Permanent Standards for the Turbidometric Estimation of Protein. By E. J. KING, Ph.D., and G. A. D. HASLEWOOD, Ph.D. 1153

Fatal Poisoning by Sodium Nitrite. By T. A. C. MCQUISTON, M.B. 1153

MEDICAL SOCIETIES

Royal Society of Medicine: Section of Laryngology: Tuberculosis of the Larynx Simulating Cancer 1154

Section of Psychiatry: Medicine and Science .. 1156

Sections of Therapeutics and Pharmacology, and Urology: Urinary Antiseptics (including Sodium and Ammonium Mandelate) 1158

London Association of Medical Women's Federation: Minor Lesions of the Rectum 1159

Association of Industrial Medical Officers 1160

REVIEWS AND NOTICES OF BOOKS

The Adrenals. By A. Grollman, M.D. 1161

Years of Endurance. By Surg. Rear-Admiral J. R. Muir, F.R.C.S. .. 1161

A Textbook of Gynæcology. By Prof. J. Young, F.R.C.S. 1161

The American Medical Profession 1783 to 1850. By H. B. Shafer, Ph.D. 1162

Quarterly Journal of Medicine 1162

LEADING ARTICLES

RENAL ASTHENIA 1163

A NEW BISMUTH PREPARATION 1163

THE CARDIAC ASPECT OF SURGICAL RISK 1164

ANNOTATIONS

Lord Nuffield's Benefaction 1166

Tropical Typhus 1166

Regional Ileitis (Crohn's Disease) 1166

Nitrite Poisoning 1167

Internal Decompression .. 1167

Thyroidectomy and the Heart 1167

Public Health Act, 1936 1168

Sir Henry Curtis-Bennett And Some would Eat that Want it 1168

Memorial to Sir Walter Fletcher.—(*With portrait-bust*) 1169

Observation or Experiment? 1169

Carbohydrate Dyspepsia . 1169

The Hæmopoietic Substance in Liver 1170

POST-GRADUATE LECTURES

Surgical Treatment of Facial Paralysis (Mr. W. M. MORRIS) (*Illustrated*) 1172

SPECIAL ARTICLES

The Training of the Senses. By R. A. YOUNG, F.R.C.P. 1174

Migration into and out of London 1175

Medicine and the Law: Charitable Appeals on a Commission Basis—Responsibility of a Surgeon for His Assistants 1176

Ireland: The Irish Free State Medical Union .. 1177

United States of America 1177

British Medical Association: The Council Dinner 1184

PROGNOSIS

CXX. — Prognosis of Hæmochromatosis. By R. D. LAWRENCE, F.R.C.P. 1171

PANEL AND CONTRACT PRACTICE

Surgery Visitation—Emergency Night-calls 1178

CORRESPONDENCE

Chronic Ulcerative Colitis (Mr. R. Mailer, F.R.C.S.) 1181

Injection Treatment of Hernia (Mr. M. Lee, F.R.C.S.) 1181

Communal Restaurants (Lady Barrett, M.D.) .. 1182

"The Ætiology of Acute Rheumatism" (Dr. F. J. Poynton) 1182

Artificial Pneumothorax (Dr. F. J. Bentley) ... 1182

The Royal College of Surgeons and its Members (Mr. R. Roche, M.R.C.S.) 1182

Radiography of the Hands in Chronic Rheumatic Diseases (Drs. G. R. P. Aldred-Brown and G. D. Steven) 1183

Anæmias of Pernicious Type (Dr. A. Piney) .. 1183

"Idiopathic" Epilepsy (Dr. B. H. Shaw) 1183

Voluntary Hospitals and the New Act (Lord Luke, Mr. A. D. Power) 1183

Vitamin-C Deficiency in Addison's Disease (Prof. L. J. Witts, F.R.C.P.) 1184

OBITUARY

Sir Alfred Percy Blenkinsop, M.R.C.S.—(*With portrait*) 1185

Willoughby Mason Willoughby, M.D.—(*With portrait*) 1186

Frank Campbell Smith, M.R.C.S. 1187

Francis Joseph Sadler, M.D. 1187

THE SERVICES

Royal Naval Medical Service—Army Medical Services—Royal Army Medical Corps—Royal Air Force — Indian Medical Service—Colonial Medical Service 1193

GRAINS AND SCRUPLES

From a Doctor in Retirement (II.) 1179

PUBLIC HEALTH

Bacteriological Tests for Graded Milk—Fumes in a Printing Works 1180

Infectious Disease in England and Wales .. 1180

PARLIAMENT

National Physique 1188

Notes on Current Topics: Voluntary Euthanasia—New Bills Presented—Scottish Midwives Bill 1190

Question Time: Bronchial Troubles among Textile Workers—Medical Opinions and Workmen's Compensation.. 1190

MEDICAL NEWS

University of Oxford 1192

Roy. Coll. Surg. Edin. .. 1192

Roy. Fac. of Phys. and Surg. Glasg. 1192

Scottish Conjoint Board.. 1192

Royal Hospital, Wolverhampton 1192

Port Regis Preparatory School 1192

Royal Society 1192

King's College Hospital .. 1192

Population Investigation Committee 1192

Margaret-street Hosp. for Diseases of the Chest .. 1191

Fellowship of Medicine .. 1149

NOTES, COMMENTS, AND ABSTRACTS

Medical Relief for Spain 1195

International Control of Dangerous Drugs 1187

A Museum of Electropathology 1195

Fresh Air Instead of Oxygen 1195

An Obscure Case of Vertigo 1195

An Emancipist 1195

Physiology and Pathology of Woman 1196

Mission Hospitals in China 1196

Medical Diary 1193

Appointments 1194

Vacancies 1196

Births, Marriages, Deaths 1194

THE COMMON COLD AND INFLUENZA

AND THEIR RELATIONSHIP TO OTHER INFECTIONS IN MAN AND ANIMALS

By J. E. R. McDONAGH, F.R.C.S. *Crown 4to.* *Price* **12s. 6d.** *net*

WILLIAM HEINEMANN (MEDICAL BOOKS) LTD., 99 Great Russell Street LONDON, W.C.1

TREATMENT IN GENERAL PRACTICE

The Second Series of Articles under the above title will be published on Wednesday, November 18th.

The Articles appeared week by week in the *British Medical Journal*, between September 7th, 1935, and September 26th, 1936.

The Volume contains fifty articles, grouped under six divisions:

Diseases of the Nervous System (17); Diseases of the Digestive System (13); Diseases of the Blood and Blood-forming Organs (6); Rheumatic Diseases (5); Diseases of Metabolism (4); Diseases of the Kidneys (5); Index, 11 pp.

Extracts from the Preface by the Editor of the *British Medical Journal*:—

"These articles have been written at our invitation by clinical teachers in various schools, and each author was asked to conform to the aim of the series by giving well-defined guidance to the general practitioner in handling the medical disorders under consideration.

"Two articles on diagnosis have been included to illustrate points raised in the articles on treatment. Thus, the importance of X-ray examination being stressed by several writers in the section on diseases of the digestive system, it was thought that the reader would welcome an article telling him what this method of examination might be expected to reveal.

"The two volumes now published cover a fairly wide field, and will, it is hoped, form a useful *vade mecum* for the newly-qualified as well as for the older practitioner of medicine."

TREATMENT IN GENERAL PRACTICE

THE MANAGEMENT OF SOME MAJOR MEDICAL DISORDERS

Articles republished from the *British Medical Journal*.

Volume II. Demy 8vo. Pp. xii+426. With 4 plates and other illustrations. 10s. 6d. net; postage 6d.

Volume I. Demy 8vo. Pp. x+250. With 7 illustrations. 8s 6d. net; postage 6d.

This volume covers the following subjects: Diseases of the Respiratory Tract; Acute Specific Fevers; Cardio-vascular Diseases.

PRESS NOTICES.—

". . . The book is one which can be cordially commended both for its matter and for its form, and it deserves a place among that small and select company of volumes which are to the harassed practitioner a very present help in time of trouble. The succeeding volumes of the series will be awaited with impatience."—"Review by Dr. Robert Hutchison in the *British Medical Journal*."

". . . an attractive book . . . a panorama of current therapeutics, a composite picture of the art and science of medicine to-day. . . . All the contributors are teachers of clinical medicine in various schools."—LANCET.

". . . the articles are practical, concise, and dogmatic . . . the book is excellent, and should prove an essential addition to the library of every general practitioner."—LIVERPOOL MEDICO-CHIRURGICAL JOURNAL.

". . . the volume is very welcome, and we hope it will have its successors. They certainly will have a permanent place in the bookrest on the consulting room tables of most of us."—SOUTH AFRICAN MEDICAL JOURNAL.

TO SECURE DELIVERY OF VOLUME II. ON PUBLICATION, ORDERS SHOULD BE SENT AT ONCE.

They may be addressed to any Bookseller.

LONDON: H. K. LEWIS & Co. Ltd., 136 GOWER STREET, W.C.1

Telegrams: Publicavit, Westcent, London. Telephone: EUSton 4282 (5 lines).

ADDRESSES AND ORIGINAL ARTICLES

DEATH IN ADDISON'S DISEASE *
(FUNCTIONAL RENAL FAILURE)

BY C. JIMENEZ-DIAZ, M.D.
PROFESSOR OF MEDICINE IN THE UNIVERSITY OF MADRID

THE disease resulting from adrenal insufficiency, which was first described by Addison, occurs with great frequency in Spain. It is a matter for legitimate conjecture whether there may be in Spain certain constitutional peculiarities related to the predominance of dark-skinned individuals, the frequency with which hypotonic and hyperpigmentated persons are encountered suggesting the possibility of a constitutional hypoplasia of the suprarenals. It is this which first attracted my attention to the various mechanisms associated with this disease and led to the choice of this subject for the present study.

Death in Addison's disease may be occasioned by intercurrent disease, but more frequently a series of progressive symptoms appears, corresponding directly to the diminution of suprarenal secretion, which becomes steadily worse and leads to a true suprarenal death. This presents itself sometimes as a clinical picture of simple coma, sometimes in an abdominal form, and sometimes as a convulsive delirium; but the mechanism is in all cases the same. By the use of active extracts of the suprarenal cortex it has been possible to keep alive adrenalectomised animals and to create in them, by using various doses of the extract, the different syndromes of adrenal insufficiency, and so to study the metabolic characters of each of these; in this way it has been possible to learn the details of progressive adrenal insufficiency right up to death and to compare the symptoms with those revealed by the study of Addison's disease.

We know to-day that in these cases disturbance of carbohydrate metabolism is not the primary cause of death. Numerous studies by myself and other workers have established this. On the other hand there are two factors to which the utmost importance has been attributed:—

(1) Dehydration or diminution of the volume of the plasma, and

(2) Diminution in the sodium-content of the blood, a hypothesis which has led recently to the belief that the cortical hormone is the regulator of the blood-sodium.

Each of these disturbances has been considered to be the principal factor, although since the work of Loeb and his collaborators, and Harrop and his followers, there is more and more general accord in favour of the second hypothesis.

The Acid-base Equilibrium

The basis of my personal conception of the mechanism involved was the study of the acid-base equilibrium of the blood, and was established before the authorities quoted above had demonstrated the importance of sodium loss. It has been far too little recognised that in all grave cases of Addison's disease a marked acidosis occurs.

One case of death from acidosis I have published [1]; Marañón and Morros [5] have collected their cases of diminution of the alkali reserve in Addison's disease, noting how frequent this is; Swingle and Pfiffner [6] have recorded low figures for the alkali reserve in eight out of ten cases studied during crises. All the cases which have come under my own observation in coma have exhibited this diminution of alkali reserve, sometimes only during the last days, but more frequently arising gradually.

Is this acidosis the cause of death? A dogmatic reply is difficult. If we ask whether this is a true acidæmia we must reply in the negative, because, even if the alkali reserve falls, the pH, measured electrically, varies, in our cases, very little from the normal; it is indeed doubtful whether acidosis is the direct cause of death in any disease unless there are gross deviations in pH. I recently saw a case of nephritis with a pH of 7·03 without any grave symptoms; the probability is rather that the state of acidosis is the physical sign of some profound disturbance which is of primordial importance.

Are we justified in believing that in Addison's disease the lowering of the alkali reserve is something more than a coincidence and has it some deeper significance? Such an acidosis might be due to: (1) over-production of acid, (2) a disorder of the acid-base regulating mechanism following dehydration, (3) renal insufficiency. Let us examine these three mechanisms separately.

OVER-PRODUCTION OF ACID

It has been noted that there may be an excessive production of ketone bodies in certain cases. I have observed this once and Swingle and Pfiffner have also done so. But such cases have been examples of inanition following prolonged vomiting, starvation, &c.; without such factors I, like Harrop, have not observed it. One cannot therefore attribute the coma or the acidosis of Addison's disease to ketosis. In these very cases the lowering of the alkali reserve had been noted before the apparition of ketosis; I have also noticed an over-production of lactic acid in Addison's disease; although Swingle and Pfiffner [6] and Thaddea [7] have quoted normal figures for lactic acid, Diaz-Rubio and others [2] in our institute have noted very high figures during periods of adrenal decompensation. At first this led us to believe that accumulation of lactic acid might be the cause of the acidosis, but this is clearly impossible. When the total organic acid in the urine in Addison's disease is estimated one finds sometimes a slight increase and sometimes a more marked increase; it is certain that, apart from lactic acid, other acids of unknown origin accumulate in Addison's disease. It is quite evident from these and other facts that if there is some over-production of acid there must be other factors of greater importance.

DEHYDRATION

In my earlier studies I believed that the acidosis of Addison's disease was the result of dehydration. Marriott has noted that in various anhydræmic states a type of acidosis appears which is the result of the necessity for economising water and eliminating various active molecules. Sodium bicarbonate is broken up because its anion is eliminated by the respiration and its kation combines with acid. In such experiments one notes a great diminution in the formation of ammonia which we explain as being due to the necessity of the blood to eliminate sodium in order to protect its osmotic properties.

Examples are given in the papers cited in the references. In all the cases which we have been able to study during a crisis the formation of NH_3 was

* An address delivered at the Middlesex Hospital on Oct. 6th, 1936.

extremely feeble in spite of extreme acidosis. In another observation I was able to establish that there are two fundamental facts in Addison's disease—the loss of sodium and the diminution in the production of ammonia. At this stage of my inquiries the train of reasoning appeared to me to be as follows.

Adrenal insufficiency gives rise to the dehydration which had been noted in animal experiments by Stewart, Picot-Estrada, and others; this gives rise, as a defence mechanism, to a loss of sodium from the plasma and a failure of formation of ammonia, and, in consequence, to a progressive acidosis, which was increased by the over-production of lactic acid, sometimes by the production of ketone bodies, and ossibly by other unknown acids.

In my medical institute in Madrid we have carried out certain studies in order to test the various relevant points. Particularly as regards the existence of dehydration, which appears to be demonstrated by measuring the water-content of whole blood, we reached the conclusion that the method is inexact. Blood is composed of one very watery element, the plasma (90–92 per cent. of water), according to the observations of myself, Bielschowsky, and Miñón,[4] and a second less watery element, the corpuscles, 60 to 68 per cent. in weight. In consequence every time that the relation of plasma and corpuscles varies, the total water-content of the blood should change. When the total of corpuscles increases the total content of the blood in water will be lessened in spite of the fact that corpuscles and plasma retain their respective natural degree of hydration. From this it follows that it is indispensable to measure both the water in the plasma and that in the corpuscles most carefully and by an exact technique which we have published in the above-mentioned studies. By this method we have studied the blood in several examples of Addison's disease, the results being given in Table I., in which it may be noted that in reality

TABLE I

Distribution of Water in the Blood in Addison's Disease

Observation.	Percentage of water in—		
	Total blood.	Plasma.	Corpuscles.
P. S.	79·93	90·84	66·84
R. M.	78·91	90·31	65·24
S. O.	80·94	91·52	68·25
E. D.	83·01	90·16	..
G. S.	80·42	91·93	..
Normal ..	78·81	90·92	65·68

there is no dehydration either of the plasma or of the corpuscles. Dehydration is therefore not a reality amongst the clinical phenomena of Addison's disease, and in consequence it cannot be the originating cause of the phenomena which we are now considering. Further, in the studies of Loeb and Harrop, one may note polyuria accompanying the very commencement of the sodium-loss which confirms that there is not a true lack of water. The two essential facts, sodium-loss and diminution of ammonia, must therefore have some other origin. It is this conclusion which has led me to give special attention to the problem of the formation of ammonia.

AMMONIA-FORMATION

In a series of cases we have made a careful study of this subject and of the question of acid-base equilibrium.

One case was studied over a long period with particular reference to the relation ammonia/total acidity and the formula of Gamble; these methods reveal the intensity of sodium-saving by ammonia-formation. Results are illustrated in Table II. and in Fig. 1, the latter showing the evolution of the deficiency during the course of the disease.

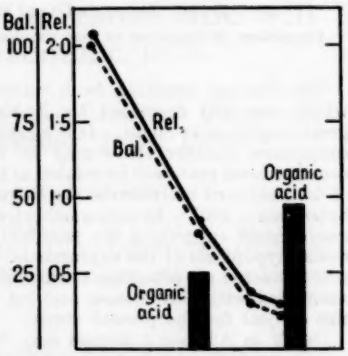


FIG. 1.—Evolution of the values given by Gamble's formula (Bal.) and NH_3 divided by total acidity (Rel.) during the downward course of a patient with Addison's disease.

It therefore becomes established that the patient suffering from Addison's disease suffers from an increasing loss of the faculty of ammonia-production, side by side with a progressive loss of sodium from the plasma. This failure of ammonia-formation (for me the essential fact upon which everything else depends) has been observed by others but not sufficiently appreciated. Thus it is noted in the observations of Pfiffner, and, more recently, Loeb, Atchley, and Stahl[8] state that ammonia-formation is feeble and particularly defective during periods of exacerbation. Since the kidney is the organ where ammonia-formation takes place, and since at autopsy one does not find any renal lesion to explain the failure so similar to that which one finds in cases of grave nephritis, it seems that the only explanation is that some functional renal insufficiency must exist. However, before endeavouring to find out by what mechanism such a thing can be produced let us seek to discover which is the primary error, sodium-loss or defective ammonia-formation.

Recent experimental work has demonstrated that the removal of the suprarenal glands sets up a series of disturbances in the salt and water balance of the organism of which the principal are (*a*) an increased elimination of sodium by the urine with diminution of that element in the plasma; (*b*) a progressive increase in the nitrogenous bodies in the blood; and (*c*) a diminution in the volume of the plasma with considerable loss of water from the organism as a whole. Various authors have believed that each of these disturbances was the most important and that the others were secondary. Thus, Swingle and Pfiffner stated in 1933 that the principal function of the suprarenal cortex was the regulation of the blood volume. Whatever may be the ultimate truth, the favourite view, thanks to the work of Loeb[9] and Harrop[10] and his collaborators, is that the principal disturbance is the loss of sodium. According to this school the function of the suprarenal cortex is to retain sodium in the organism, and the moment this function is stopped the sodium ion is excreted in excess. It appears certain that the sodium loss cannot be explained by primary loss of water. For example, in various types of polyuria there is no diminution in the sodium level of the plasma, and in Addison's disease the absolute loss of sodium is greater than that of chlorine or of water. At the outset, when the sodium loss is most rapid, there is a polyuria but the concentration of sodium in the urine is increased. It would therefore seem

TABLE II.—ANALYSES OF BLOOD AND URINE IN CASES OF ADDISON'S DISEASE

(*a*) Cases in good health. (*c*) Cases with marked insufficiency.
(*b*) Cases with mild adrenal insufficiency. (*d*) Grave cases.
Rel = NH_3/Total Acid. Bal. = Gamble's balance. All figures are expressed in mille-equivalents.

Subject.	Blood.			Urine.							
	pH.	Alk. res.	Cl.	pH.	CO_3.	Bicarb.	Org. acid.	NH_3.	Total acid.	Rel.	Bal.
G. S. (*a*) ..	7·33	59·9	96	5·35	..	..	..	47·1	22·5	2·09	14·8
„ (*b*) ..	7·40	43·3	76	5·17	..	..	39·8	26·1	31·9	0·81	37·7
„ (*d*) ..	7·40	..	..	5·08	..	..	..	15·5	40·4	0·38	19·5
„ (*d*) ..	7·30	33·9	..	4·88	..	..	71·2	15·1	40·4	0·37	16·6
R. L. (*a*) ..	7·41	61·3	84	6·59	11·5	8·73	..	26·3	9·9	2·64	30·2
„ (*b*) ..	7·39	45·8	80	5·46	..	..	..	22·4	15·9	1·40	28·6
M. I. (*a*) ..	7·37	52·6	95	6·90	1·73	1·48	..	9·2	4·1	2·22	19·4
P. S. (*a*) ..	7·55	47·9	83	5·78	3·43	1·10	26·3	25·9	13·2	1·96	37·9
E. D. G. (*b*) ..	7·31	39·9	..	5·05	..	..	..	23·5	36·6	0·64	..
„ (*d*) ..	7·30	36·5	..	5·38	..	..	..	5·9	30·6	0·19	..
R. Z. (*b*) ..	..	61·1	105	5·46	2·30	0·45	73·0	2·4	28·0	0·08	29·8
„ (*b*) ..	..	..	..	..	..	..	62·2	9·4	28·5	0·33	..
E. Q. (*c*) ..	..	26·1	..	5·24	6·05	0·75	69·5	25·9	37·6	0·68	40·0
„ (*c*) ..	..	27·5	102	..	2·04	0·55	82·0	61·0	43·5	1·10	55·0

probable that the two losses are independent of one another, or, rather, that the kidney requires to eliminate an increased amount of water in order to get rid of the sodium.

The administration of sodium has an exceedingly favourable effect upon decapsulated animals, as it has upon sufferers from Addison's disease, even though such medication is not enough to keep them indefinitely alive if one does not simultaneously administer active cortical extract. In any case by giving sodium and cortical extract the condition of the animal is greatly improved and all the symptoms of insufficiency can disappear, but without the volume of the plasma ceasing to diminish unless the necessary quantity of water is administered; which proves that the symptoms of adrenal insufficiency are not due to mere diminution in the volume of the plasma.

Experimental Study

It is important to determine as exactly as possible the cause of the sodium loss. To confirm our clinical observations we have undertaken an experimental study. In the first place we have studied the respiration and ammonia-formation by the kidney in Warburg's apparatus in the presence of a substratum of amino-acids, comparing the behaviour of normal kidney with that of the kidneys of cats which had been subjected to decapsulation. These observations, which are being carried on in our Institute of Research by Barreda, Ochoa, and Villasante, are not yet complete, but the results at present obtained appear to confirm our clinical observations (Table III.).

There is some functional defect of the kidney, but how can this be explained in the absence of any renal lesion? It must not be forgotten that the kidney is an organ which consumes more oxygen than other organs, and that its oxygen consumption is much greater than what would be expected from its mass. We do not yet know what are the primitive substances employed by the kidney as a source of energy, but it is probable that they are partly in the nature of carbohydrates.

Hemingway and Phelp believe that one-third of the oxygen consumed by the kidney comes from the combustion of carbohydrate. The studies of Ferrari and Hoeber point in the same direction; it would seem to be a carbohydrate system without any useful anaerobic phase. The inhibitory effect of iodoacetic acid on renal secretion nevertheless demonstrates the probability that hexoses are esterified.

As long ago as 1916 Marshall and Davies, who observed nitrogenous retention in Addison's disease, believed that the suprarenals produced some substance necessary for the regulation of renal function, and that the latter became disturbed when this substance was lacking It is also very important to remember that diminished suprarenal secretion produces certain effects on muscles, others on the kidney, and others, as has recently been shown by Versar and Laszt, on intestinal absorption, and that similar effects can be produced by the administration of

TABLE III

Respiration and Deamination by the Kidney of the Cat "in vitro"

(Substrate: d–l. alanine, M/50)

(A) NORMAL

No.	Q_{O_2}		Q_{NH_3}		$Q_{Amino\text{-}N}$	
	Sans.	Avec.	Sans.	Avec.	Sans.	Avec.
1 (*a*)	− 4·6	−10·9	0·0	7·39	..	..
(*b*)	− 4·6	−11·8	0·0	7·15	..	..
2 (*a*)	−10·1	−23·6	0·8	11·70	..	..
(*b*)	−10·5	−34·5	1·8	7·60	..	..
3 (*a*)	..	−10·1	0·0	10·01	..	..
(*b*)	..	..	0·0	4·82	..	..
4 (*a*)	..	−10·8	0·0	6·45	..	..
(*b*)	− 4·1	−15·3	0·5	5·14	1·39	−10·10

(B) ADRENALECTOMISED

1 (*a*)	..	−11·2	0·92	4·13	..	..
(*b*)	− 3·93	−10·5	..	3·33	0·0	− 2·77
2 (*a*)	− 9·50	−19·5	0·0	1·54	..	..
(*b*)	..	..	0·0	3·94	..	..

Average Q_{NH_3}: Normal .. .. .. 7·53
Adrenalectomised .. .. 3·23

Q_{O_2} = cubic millimetres of oxygen evolved per milligramme dry tissue per hour.

Q_{NH_3} and $Q_{Amino\text{-}N}$ are the ammonia and amino-acid nitrogen production respectively, expressed in similar units.

"Sans" and "Avec" refer to the absence or presence of alanine.

iodoacetic acid; this substance inhibits the absorption of fat in a manner similar to that seen after adrenalectomy, and that adrenalectomy produces a muscular asthenia arising, according to Kuczinsky and Nachmanson, from the same mechanism which produced the type of muscular contraction seen after impregnation with iodoacetic acid.

Is it not logical to suppose that the suprarenal cortex exercises its influence on a general chemical process of primordial importance to the organism in a manner exactly opposite to that of iodoacetic acid? It is on this hypothesis that I suggest, as a

description of the state in which a perfectly healthy kidney, with a normal blood-supply, becomes incapacitated from fulfilling its function owing to a disturbance of utilisation—"*renal asthenia*." We have particularly studied the intensity of hydrolysis of a

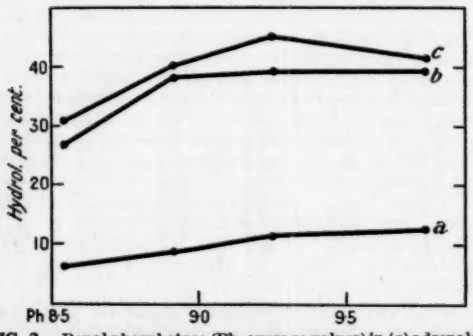


FIG. 2.—Renal phosphatase (Ph. average values) in (*a*) adrenalectomised cats, (*b*) an adrenalectomised cat subsequently found to have an accessory suprarenal, and (*c*) normal cats.

phosphohexose ester by normal kidneys and by those of decapsulated animals. The remarkable difference is seen in Fig. 2.

In brief, my belief is that the action exercised by the suprarenal gland on the elimination of the sodium ion is as follows—the cortical secretion acts upon the metabolism of the kidney as upon other organs, and any shortage of this secretion produces a defect in the liberation of that energy necessary for ammonia formation, by which the bases of the plasma are saved, and sodium in particular.

Other Evidence of Renal Insufficiency

The conception of renal asthenia or functional renal insufficiency of metabolic origin is certainly of some importance in other diseases; one immediately conceives that it may play a part in diabetes. It is clear that in the final stage of diabetic coma renal insufficiency plays a part which is shown not only by occasional retention of nitrogen, &c., but also in the diminution of the metabolic activity of the kidney; Snapper and Grunbaum, who demonstrated the rôle of the kidney in the destruction of keto-acids, believe that such insufficiency may be a very important fact.

Further than this, I have myself observed in many cases of diabetes, in the terminal period, that the formation of ammonia, previously satisfactory, ceases to occur in a degree sufficient to bring about the elimination of the acid excess associated with sodium retention. In such cases the loss of base is augmented and the necessary consequences follow. The lowering of the plasma-sodium in severe cases of diabetes and the beneficent effect of the administration of intravenous saline in such circumstances are well-known facts.

Insulin and cortical extract are the two hormones which have greatest effect on carbohydrate metabolism; it seems logical that the same effect of "renal asthenia" should be observed in insulin insufficiency as is found in Addison's disease. Working with Parra I made the following clinical experiment: in a case of severe diabetes, well controlled by diet and insulin, we diminished the insulin little by little whilst simultaneously increasing the ketogenic elements of the food; the immediate result was the lowering of the relation of ammonia to total acidity with increased elimination of sodium in the urine and diminution of this substance in the plasma, potassium being increased (Fig. 3).

From what has been said above it would seem that renal insufficiency may occur through disturbance of the internal metabolism of the kidney with a lack of ammonia-formation and a consequent loss of sodium from the plasma. This is equivalent to what normally happens in conditions of acidosis, but I believe that the pathogenic effect is not due to acidosis but is a specific effect of the diminution of the plasma-sodium. The consequences of this fall in the sodium-content of the blood are extremely interesting; if it is true, as Gamble has demonstrated, that the concentration of base in the plasma is constant, the fall of sodium must bring about a parallel loss of water in the serum and in the extracellular fluids, and simultaneously a loss of intracellular water which will carry potassium with it. Even if one believes with Peters that the cellular membrane is impermeable to potassium this may only be true in the normal state, because in pathological conditions it seems, according to the work of Darow and others, that such a loss of water and potassium from the intracellular tissues is possible. Such a loss is accompanied by cellular destruction producing an increase in urea and other nitrogenous bodies; this is demonstrated by the investigations of McCance on the effects of sodium deprivation. My own view is that this increase of nitrogen is more due to cellular destruction than to a diminution in "urea clearance."

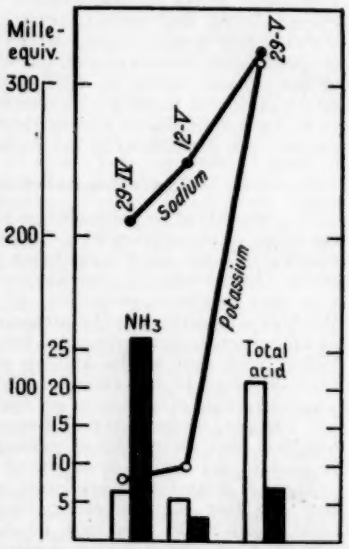


FIG. 3.—Ammonia formation and elimination of bases in a diabetic after withdrawal of insulin.

In chronic renal disease there are two phases in the downward path towards terminal uræmia. A first phase with slow retention but with slight effect upon the general condition of the body, and a second grave phase in which nitrogen retention is progressive and irrecoverable. In addition to the increase in urea and creatinine in the blood there is retention of indican and aromatic bodies, with ionic disturbance; increase in potassium and diminution in sodium.

We know to-day that renal acidosis, marked by diminution of the alkali reserve, is due to defective ammonia-formation. Krebs has shown the same thing experimentally by the method of Warburg. The second progressive and irremedial phase of uræmia is accompanied by anæmia, wasting, and asthenia, or, in other words, by a hyper-destruction or "plasmolysis," to employ the phrase of Senator. It is clearly of great importance to endeavour to arrest the progress from the first to the second phase,

and this may be accomplished if we understand the mechanism of the change which I believe to be as follows:—

(1) Lack of ammonia-formation by the diseased kidney.
(2) Loss of sodium, in consequence of the lack of ammonia.
(3) Tissue autolysis through loss of sodium.

The process is therefore the same as that which occurs in Addison's disease or in terminal diabetes, with the sole difference that the failure of ammonia-formation is due to renal destruction in Bright's disease, whereas in diabetes it is due to a metabolic defect by which the utilisation of oxygen and ammonia-formation become difficult for the kidney.

Conclusion

The thesis which I have put forward naturally requires further confirmation and much study; my sole desire to-day is to underline the importance of certain factors in the evolution of the so-called uræmic states, whether organic or functional, and to emphasise that amongst them occurs one which I call "uræmia of metabolic origin," not previously described, but, in my opinion, of great importance on account of the light it throws upon the progressive and fatal evolution of Addison's disease, diabetes, and certain other diseases.

SELECTED REFERENCES

1. Jimenez-Diaz and Mansera: Ann. de la Clin. J-D, 1928, i., 177.
2. Diaz-Rubio: (Thesis) Madrid, 1933.
3. Jimenez-Diaz, Rubio, and Guijosa: Gac. méd. espan., 1931.
4. Jimenez-Diaz, Bielschowsky, F., and Miñón, J. R.: Klin. Woch., 1935, xiv., 995.
5. Marañón, G., and Morros, S.: Sigl. méd., 1927, lxxx., 197.
6. Swingle, W. W., and Pfiffner, J. J.: Medicine, 1932, xi., 371.
7. Thaddea, S.: Klin. Woch., 1935, xiv., 295.
8. Loeb, R. F., Atchley, D. W., and Stahl, J.: Jour. Amer. Med. Assoc., 1935, civ., 2149.
9. Same authors: Proc. Soc. Biol. and Med., 1933, xxx., 808; 1933, xxxi., 130.
10. Harrop and co-workers: Jour. Exper. Med., 1933, lviii., 1; 1935, lxi., 839.

SOME TUMOURS AND ULCERS OF THE PALATE AND FAUCES *

By Walter Howarth, M.B. Camb., F.R.C.S. Eng.
SURGEON TO THE EAR, NOSE AND THROAT DEPARTMENT, ST. THOMAS'S HOSPITAL

The subject of tumours of the palate is one in which I have long been interested, and in the course of twenty-five years I have dealt with a considerable variety of them. Tumours in this situation have commanded scant attention from surgeons since Stephen Paget published a paper about them fifty years ago, although sporadic cases have been reported and discussed. As far as I can ascertain from the literature, this country has provided more cases than any other country of Europe, or America. Palatal tumours are not so uncommon as is often supposed, but are rare enough to be thought worthy of record, and it is surprising what a large variety may be met with.

As far back as 1877 J. F. Cohnheim put forward an ingenious theory that the main source of origin for tumours consists in certain relics of fœtal tissues which, owing to their being superfluous or to their development being arrested, have never reached maturity but have remained quiescent in the midst of better developed tissues. The point at which the fault in development first arises is probably some early period of embryonic life when more cells are being produced than are needed for the formation of the part and a quantity of cells remain unused; of insignificant dimensions perhaps, but, on account of the embryonic nature of the cells, with great powers of proliferation. The region with which we are dealing is one which lends support to Cohnheim's theory, as it is one in which relics of fœtal tissue may be expected, for the palate is formed by a complicated folding in of fœtal structures.

Non-Malignant Tumours

THE MIXED PAROTID TUMOUR

It would not be possible to discuss in detail every variety of tumour that is met with. I will pass over the small papillomata and fibromata that are so commonly seen attached to the surface of the palate or faucial pillars and begin with that interesting tumour which is commonly known as the "mixed" or "mixed parotid" tumour, owing to its close resemblance to those curious tumours which occasionally appear in that gland. These are by far the most common tumours that occur in the substance of the palate, and at least 150 have been recorded. The method of origin of these tumours, in the parotid as well as in the palate (for clinically as well as histologically they present the same characteristics) has given rise to controversy. They used to be called myxoendotheliomata, although some considered that a carcinomatous element was present in some of them, but a number of different names have been applied to them. Most authors, following R. M. Fry, have now discarded the idea of their originating either from (1) the endothelium of lymphatic vessels, or (2) embryonic cells which have remained dormant, or (3) embryonic gland tissue, and believe that they are epithelial in origin and arise from fully developed glandular tissue. This was held by E. Krompecher as far back as 1900, who stressed their epithelial origin with peculiar mucoid and cartilaginous metaplasia. A. Fraser and, later, Fry have shown that the cartilaginous appearance in certain areas is merely due to a fibrillar condensation of the myxomatous tissue, with a resulting pseudo-capsular arrangement round the cells.

These tumours are for the most part very slow growing, and it is not uncommon for them to be present for many years before discovery. They cause no pain but attention is generally drawn to them while still small on account of some discomfort in mastication or interference with a denture. They are usually encapsulated and are generally regarded as comparatively benign in character. This, however, is not always the case and, particularly if the capsule is ruptured through trauma or if an incomplete operation is performed, the growth invades the tissue surrounding it, undergoes malignant changes, and may give rise to metastasis. Surgical treatment is as a rule simple as they shell out readily and if the entire capsule is removed cure is usually effected. In all operations inside the mouth I prefer the diathermic knife to the scalpel.

Recently I met with an exceptionally large example of these mixed tumours. Although it had apparently been present for several years and had progressed very slowly, it was thought to be malignant. The hard palate was involved as well as the soft, but there was no infiltration; the tumour was quite smooth and the mucosa over it intact. I removed it with the diathermic knife and found that while it had eroded much of the hard palate in the places where this had occurred the bone was smooth and firm.

* Abstract of the Semon lecture of the University of London delivered at the house of the Royal Society of Medicine on Nov. 5th, 1936.

Another patient was sent to me in 1928 by the late Sir Percy Sargent with the history that twenty-two years previously he had removed a typical mixed tumour from the right parotid gland and there was now a lump in the palate. I found a small, smooth tumour about the size of a pigeon's egg in the right side of the soft palate; the margins of the growth were ill-defined and it was not freely movable. At the operation the main part of the growth shelled out easily but the deeper part was firmly attached along the border of the internal pterygoid plate, leaving on removal a rough surface. I placed four one-milligramme radium needles in the deeper part of the wound and left them in for five days. Healing took place and the palate remained normal. Microscopical examination showed a typical mixed parotid tumour. Two years later the patient returned with a lump in the right parotid region and I found a firm nodular tumour the size of a walnut. On removal it presented the same microscopical appearance as that of the tumour removed from the palate. It is interesting that so long a time as twenty-two years should have elapsed between the original parotid tumour and the palatal one, and that the recurrence in the parotid should have taken place so soon after the removal of the palatal tumour. It may be that the deeper part of the palatal growth was directly continuous with the parotid region and that the radium—rather a small dose—whilst destroying the tumour cells in the region of the pterygoid plate, stimulated those that were more deeply situated.

HÆMANGEIOMA AND HÆMANGEIOFIBROMA

These are rare tumours in the palate, but it is advisable to consider the possibility of their occurrence, as in two cases that I know of an incision was made in the belief that a peritonsillar abscess was being dealt with, with almost fatal results. In vascular tumours diathermy is particularly valuable. In one case I saw in 1913 after it had been incised the patient was almost moribund from hæmorrhage. As the growth felt very firm and seemed to infiltrate the palate a sarcomatous condition was suspected. The operation for removal was a severe one as it was before the days of electro-surgery and necessitated an external approach as well as one through the palate. The external carotid was tied and a block dissection of glands was made, but there was no evidence of malignancy and the growth was found to be a hæmangeiofibroma. The patient is still alive and well after twenty-three years.

FATTY TUMOURS

I have seen only one fatty tumour in the palate A. Alagna, in describing twenty years ago a unique case of lipoma myxomatosum, came across only four cases of palatal lipoma. A few other cases have since been recorded but the number is still very small. My case resembled one reported by Mr. Herbert Tilley in 1919 in that it pushed the tonsil downwards. There was also a swelling in the submaxillary region which I decided to remove for biopsy, but when I cut down on it I found it continuous with the palatal tumour. Rapid section and staining in the theatre showed it to be a fibrolipoma. I proceeded with the removal of the growth through a Kocher's incision and, by extending the dissection from outside, was able to identify the pterygoid plates and shell out the whole growth, including the palatal portion, without making any wound in the palate. The tumour was of considerable size, botryform in appearance, and seemed to be encapsulated. The boy is alive and well after six years.

ADENOMA AND ADENOCARCINOMA

Adenoma is represented in my series by only one case seen seventeen years ago. The tumour was embedded in the soft palate. There was no infiltration and the growth, which was encapsulated, was easily removed with the diathermic knife.

Adenocarcinoma is still rarer. G. Finder, in an exhaustive study of the literature, found only six cases recorded. My only case was a woman of 74 sent to me in 1929 with a history of a tumour noticed only two months previously. It was firmly fixed in the hard and soft palate, and the mucosa over it, which was intact, showed numerous dilated vessels. I thought it was an adenoma, but when removed with the diathermic knife it presented the structure of an adenocarcinoma arising from the mucous glands. The patient remained well for four years and then noticed a further lump in the side of the palate. I removed this, along with the surrounding portion of the palate, and there has been no further recurrence. This type of tumour appears to grow slowly.

OSTEOMATA

These have been occasionally described in the palate. G. Horsley, in America, has given a good account of a case with an illustration. This occurred almost in the midline and was definitely nodular and larger posteriorly than in front. It was covered with intact mucosa and was removed without difficulty with gouge and bone forceps with an area of healthy bone around it. In structure it was a typical osteoma. I have not found any record of a similar case. Many years ago I had under my care a small boy with a hard oval bony swelling under the mucosa of the hard palate in the midline. It was quite smooth and was said to have been present for many years. I exhibited the case and it proved to be an example of "torus palatinus," an anatomical peculiarity first described by Rickman Godlee, consisting essentially of a projection downwards of the diploe covered over by compact bone. In one case I have since seen the swelling was not symmetrical, but presented an extra lobe on one side. This might have been regarded as osteoma, but I recall that in the examination of nearly three thousand skulls Godlee did not find a single example of true osteoma.

Malignant Tumours

All the tumours so far mentioned have been solid tumours in the substance of the palate with no ulcerated surface. In malignant disease of the palate we are usually confronted with an ulcerating tumour or a raised plaque with a varying amount of infiltration around. But in one type of epithelioma there is a diffuse shallow ulceration with a serpiginous outline and little or no infiltration at the edge. This resembles tuberculous ulceration; it is not very painful and the malignant nature is often not suspected until a piece has been removed for microscopical examination. The superficial invasion of a wide area and the fact that different portions show varied characteristics is typical. The malignancy is of high degree and both the cases with which I have had to deal did badly after excision. Growths of the tonsil tend to spread either upwards into the palate or downwards into the base of the tongue. Although tumours in this region may present similar clinical appearances, it is seldom if ever possible to estimate the chances of a successful result.

OPERATION

The method I employ for the treatment of these cases is excision of the growth and surrounding tissues in one piece with the diathermic knife. I have employed this method consistently since 1916 but lay no claim to priority as I believe that Mr. Norman Patterson employed a somewhat similar

method before me and he refers[1] to a case of Mr. Lambert Lack's in 1913. As I have evolved a particular technique a few words about it may not be out of place. In dealing with palatal and faucial tumours it is of extreme importance to be well wide of the apparent growth, as the lymphatic anastomosis in the palate is very free.

For this reason I begin the incision on the other side of the uvula, carry it up through the soft palate and deepen it until the whole substance of the soft palate is cut through and the edge of the hard palate is reached. The incision is then turned outwards along the edge of the hard palate to the hamular process. The shining tendinous fibres of the internal pterygoid muscle can always be recognised and the incision is carried along this muscle until the alveolar border is reached just above the mylohyoid ridge. The incision is then carried across the floor of the mouth, the exact point depending on the extent forward of the growth. As the incision is deepened in this situation the lingual nerve is seen and troublesome bleeding may occur from branches of the lingual artery which have to be picked up and tied. The incision is then carried into the substance of the tongue towards the middle line and then backwards through the tongue musculature to turn outwards behind the posterior faucial pillars. The growth and surrounding healthy tissue is thus removed in one piece. If there is any oozing from the raw surface it is easily stopped with the diathermic button or by applying an artery forceps and touching this with the spark. A large pack of gauze impregnated with bismuth subgallate and paraffin is held in position in the cavity with a couple of stitches and removed the following day. The wound heals under a very dirty-looking slough which separates in about a fortnight.

There are many advantages to be gained from diathermic excision. The absence of bleeding gives a remarkably clear field. The depth of penetration of the spark ensures the destruction of a wider area of tissue than that removed, and the risk of distributing cancer cells in the wound is less than with scalpel and forceps.

During the years 1916–31, I have dealt with 61 cases of malignant disease of the palate and fauces. Of these, 15 (25 per cent.) were alive more than five years after operation. Of the remaining cases no less than 22 died within the first year (36 per cent.); whilst the remaining 24 (39 per cent.) lived for periods varying from one year to four years. Of the 15 cases that passed the five-year period, 1 is alive nineteen years after the operation, 1 survived for fifteen years, and the rest between five and ten years. These figures may not seem very satisfactory, but it must be remembered that the cases were not selected in any way; many were regarded as hopelessly inoperable in the ordinary way, and many were complicated by malignant glands in the neck which necessitated block dissection on one or both sides. Gland involvement probably affects the prognosis adversely by more than 50 per cent.

OTHER METHODS OF TREATMENT

Various forms of radiation have been employed during the past decade with an increasing degree of success, and with the improvement in the technique of radium application, mainly due to E. G. Berven of Stockholm, some striking results have been obtained. In this country the local application of radium and the application of a 5-gramme radium bomb externally has been in use for too short a time to estimate its ultimate value. The results so far are promising, and it will be interesting to see how the common squamous-celled carcinoma responds to radiation. Striking successes in other countries have been obtained in the epidermoid carcinoma described by Regaud and Schmincke under the name of lympho-epithelioma. This may arise from modified epithelium overlying lymphoid structures in the tonsils or pharynx, may occur in young subjects as well as in old, grows slowly but tends to produce early metastases in the neck and elsewhere, and shows a marked primary response to radiation. Ewing, in America, recently analysed 200 cases of malignant disease in the region of the tonsil and found that only 4 per cent. were lympho-epithelioma, whereas 72 per cent. were squamous-celled carcinoma. There is no single example of lympho-epithelioma in my 61 cases, and this is also the case in the series of 51 cases recently described by Mr. Norman Patterson. This apparently racial variation in the type of malignant tumour shows how difficult it is to make comparisons.

[1] THE LANCET, 1934, ii., 633.

Ulcers

Passing over the massive infiltrations and ulceration associated with tertiary syphilis and Vincent's angina I will consider briefly those cases in which a shallow superficial ulceration is the predominant feature, as it is these cases which so often give rise to difficulty in diagnosis. We have all been brought up to keep the possibility of cancer, syphilis, and tubercle in the forefront of our minds—with the streptococcus, Vincent's angina, moulds, and fungi as accessory to the main issue. I have already mentioned the form of carcinoma in which diffuse shallow ulceration is the main feature. Syphilis in the palate and fauces manifests itself in the same protean way as is the case elsewhere and the lesions may resemble, though never quite exactly, those caused by other agents. Tuberculosis of the fauces is almost invariably seen in patients who are in the last stages of pulmonary tuberculosis. It is agonisingly painful and rapidly progressive; but occasionally cases are seen in which there is a local manifestation without any obvious lung disease.

One such case came under my notice a few years ago. There was a shallow ulcer extending from the upper part of the tonsil on to the palate which was almost painless. Sections from it showed giant-celled systems and tubercle bacilli. There was no trace of lung involvement, either clinically or by X ray examination. I decided to excise the ulcer and this was done with the diathermic knife under local anæsthesia. Healing took place and there was no further local manifestation, but within a year the patient was dead from rapidly progressive pulmonary tuberculosis.

The more chronic form of tuberculosis that we call lupus provides many cases of shallow ulceration in the fauces and usually responds to treatment satisfactorily, but there are intermediate forms which, for want of a better term, we may call "lupoid" which often resist treatment and show a tendency to relapse.

A recital of the various activities of the streptococcus would lead me too far afield. I will just remark how very chronic and resistant to treatment some streptococcal infections may be, more particularly those that are due to *S. viridans*.

"Precancerous Epitheliomatosis"

There is only one other form of shallow ulceration which is of considerable significance and may have wide implications. It is the condition that I described eighteen months ago under the designation "precancerous epitheliomatosis." I believe this to be a definite entity. In the early stages there is a diffuse shallow ulceration with raised whitish plaques and a milky pellicle covering the outer zone. In

some cases there are multiple papulo-squamous eroded tumour-like lesions, whilst occasionally they may take the form of flat plateau-like cellular infiltrations of papillomatous form. The true significance may not be appreciated apart from the definite histological picture, first pointed out to me by Dr. Philip Panton, as very similar to that described by Bowen of Boston in two cases of dermatosis with chronic atypical epithelial proliferation. The main clinical feature is the chronicity of the process; it is not uncommon for fifteen or twenty years to elapse before definitely malignant changes supervene.

The first case that came under my notice was sent to me in 1920 by Sir Cuthbert Wallace. The side of the tongue was involved as well as the palate and fauces. The microscopical sections showed no sign of malignancy and the Wassermann reaction was negative. Light diathermic cauterisation over the whole surface caused complete disappearance of the lesion, but from time to time they reappeared, often in slightly different situations, the intervals being sometimes as much as three years. Frequent biopsies revealed no evidence of malignancy but diathermic cauterisation was beginning to be less effective in destroying the lesions. It is only within the last few months that the condition has become definitely clinically malignant, sixteen years after the original appearance, and in addition the patient has developed a carcinoma of the rectum.

The second case had had this condition for more than two years before I saw him and after various forms of local treatment had produced no improvement. The Wassermann and Sachs-Georgi reactions were negative. I was struck with the close resemblance to the original appearance of the previous case, more particularly by the white patches of desquamating epithelium and the papillomatous condition in other parts. Removal of a piece showed on section a similar histological resemblance, almost identical with that seen in the precancerous dermatosis of Bowen. The epithelium is greatly thickened, the thickening consisting of great elongation and broadening of its interpapillary processes, the epithelium between those processes being thin. There is a layer of necrosed keratinised epithelium on the surface, infiltrated with inflammatory cells and masses of micro-organisms. The keratinised epithelium is continued down in the centres of many of the downgrowing epithelial processes. There are small groups of large stratum granulosum cells. The cells of the stratum Malpighii vary considerably in size. In the cytoplasm many of them are eosiniphilous hyaline bodies. Such a body frequently fills a cell, the nucleus being flattened at its periphery. The basal cells of the epidermis are in places several layers thick. They vary in size and general appearance and often have irregularly shaped hyperchromatic nuclei. These features are conspicuous in a portion of less thickened epithelium at this end of the section. The subepithelial connective tissue is fibrotic and contains areas of dense infiltration with lymphocytes, plasma cells, and eosiniphil leucocytes. This case was treated with light diathermic cauterisation and the lesions, for the most part, disappeared. The papillomatous part was the most resistant to treatment, but when last seen there was no definite histological evidence of malignant change.

The third case occurred in a doctor who had observed the peculiar whitish patch on his right faucial pillar and uvula for more than two years. As it was not painful and caused no discomfort he did not bother about it. When he began to have severe pain in the ear on swallowing advice was sought, and as a result of biopsy he was assured that the condition was non-malignant.

Biopsy also showed the same histological picture as in the two previous cases. Light diathermic cauterisation was undertaken and the lesion disappeared rapidly. At the operation I found a small patch of ulceration extending behind the posterior faucial pillar near the Eustachian tube; it was doubtless this portion which gave rise to the pain on swallowing. Eighteen months later the patient came back with a small recurrence on the palate; a small piece which was removed showed the same histological picture. Light diathermic cauterisation again caused rapid healing of the ulcer and there has been no return, but this is only six months ago. When I last saw him it was impossible to see that any ulceration of the palate had been present.

If these cases show, as I believe they do, that a definite precancerous condition can and does exist in the palate and fauces, repeated microscopical examination in atypical and slowly progressive ulcers that are not infrequently met with might result in more definite diagnosis and the application of a more efficient form of treatment.

A NEW METHOD OF TREATMENT IN HÆMOPHILIA

BY W. A. TIMPERLEY, M.Sc., M.B. Sheff.

A. E. NAISH, M.D. Camb., F.R.C.P. Lond.

LATELY PROFESSOR OF MEDICINE, UNIVERSITY OF SHEFFIELD; AND

G. A. CLARK, M.D. Durh.

PROFESSOR OF PHYSIOLOGY, UNIVERSITY OF SHEFFIELD

THE literature dealing with hæmophilia and its treatment is voluminous and contradictory and clearly shows that up to the present no therapeutic measure has been discovered which can counteract all the manifestations of the disease. It is only when hæmorrhage occurs on an easily accessible surface that treatment can be applied with any reasonable hope of cutting short the duration of bleeding, and in these cases the most satisfactory remedy has probably been viper venom.[1,2] But any method of local treatment necessitates considerable attention and not a little ingenuity in maintaining plugs, dressings, and appliances in position, and obviously it is useless in the prevention of those internal hæmorrhages which produce so much disability and deformity in this disease; nor can reliance be placed on local treatment where injuries are extensive, or where major surgical interference is indicated for intercurrent disease. In these cases it is necessary to have a remedy which, given orally or parenterally, will change the blood as a whole so that the clotting-time is reduced and a firm clot is formed at the site of vascular damage. Claims to fulfil this rôle have been made from time to time for a great number and variety of substances, but they have never been upheld by all who have investigated them.

Doubtless the tendency of hæmophilia to spontaneous exacerbation and remission is responsible for much of the conflicting evidence. Treatment by ovarian extract, originated in 1904,[3] has had some degree of success in the hands of Carol Birch,[4] but its efficacy has since been denied.[5] In 1929 Pickering[6] advocated the use of liver in the diet of hæmophilics, but the value of this remedy too has been challenged,[7] although recent work[8,9] may revive interest in it. Macfarlane lately summed up the situation (perhaps a little too severely) by saying: "No prophylactic treatment of hæmophilia, however, has met with any success."[2]

The Material now on Trial

In the course of investigations unconnected with hæmophilia, one of us (W. A. T.) found that if egg-white was incubated at 37° C. for several days in the presence of potassium bromide it was possible to extract from the mixture a substance whose addition

to blood in vitro under certain conditions led to the formation of a clear structureless gel which did not shrink like the ordinary blood-clot. It was found further that this substance, when injected intravenously into cats (either decerebrated or suitably anæsthetised), reduced the clotting-time of the blood, and that very large amounts could be given intravenously without producing any signs of intravascular clotting. This led to the idea that the substance might be useful in hæmophilia. It appeared not to be toxic, so far as could be judged from animal experiments, but in order to determine this with more certainty W. A. T. repeatedly had intravenous injections himself at varying intervals of time. He noted no ill effects whatever.

The methods of preparing the material and the tests of its efficiency have since undergone gradual modification. There have been many difficulties and disappointments, but work we have done since the greater part of this paper was completed suggests that a much simpler mode of production is possible. Preliminary observations with derivatives of mucic acid have yielded promising results, and one of these preparations has been used for the later injections in some of the clinical cases recorded below, where it is referred to as M.A. in the column headed "Injection." It is not yet possible, however, to assess the value of this line of attack on the problem.

Apart from mucic acid derivatives, the material used in the cases described in this paper has been prepared by one or other of the two following methods. That prepared by the first method gives the usual protein reactions and gradually loses its activity in the course of three or four days; no signs of protein shock have been observed with this preparation when it has been given to patients, with the possible exception of Case 12. By the second method a more stable preparation is obtained which gives no protein reactions; this has latterly supplanted the material made by the first method.

Method 1.—Potassium bromide (40·0 g.) is thoroughly mixed with egg-white (200 c.cm.) and the mixture incubated at 37° C. for three days; 200 c.cm. of distilled water is added and then six volumes of 98 per cent. alcohol. The mixture is filtered and from the filtrate the active material is precipitated by adding an equal volume of acetone; this precipitate is dissolved in water and dialysed till free from potassium bromide, dried in vacuo at 60° C. and dissolved in 0·9 per cent. potassium chloride for injection.

Method 2.—The acetone precipitate obtained in the first method is warmed at 70° C. for fifteen minutes with 20 per cent. nitric acid, neutralised with potassium hydroxide, concentrated in vacuo at 70° C. to one-twentieth of the volume; 98 per cent. alcohol is then added to the original volume, and the precipitated potassium nitrate is filtered off. The filtrate is again concentrated in vacuo at 70° C. to one-twentieth of its volume, a mixture of equal parts of alcohol and ether is added until no more yellow precipitate is formed and the resulting clear solution is concentrated till free from alcohol and ether. This leaves a cloudy solution which is allowed to stand for 24 hours; it is then filtered and the active material is crystallised from the resultant filtrate by further concentration. For clinical purposes the purification of the substance has not, so far, been carried past this point. The fact that no accurate quantitative method of estimating potency is yet available has made difficult the purification or identification of the active material.

Evidence of Efficacy

Up to the present the only tests of potency, apart from observations on patients, have been effects on the clotting-times of (1) cats, (2) normal volunteers, and (3) hæmophilic volunteers. In cats the clotting-time is apt to be affected by the anæsthetic administered, and even when a decerebrated preparation is used the results are liable to be disturbed by various attendant circumstances; detailed observations on this aspect of the problem will be published later. In normal persons the fall in clotting-time is less than in a hæmophilic, and for quantitative purposes is of little value. The chief test of efficiency is the effect on the clotting-time of the patient himself or a hæmophilic volunteer who has not had a recent dose; but at the best such observations give only a rough indication of potency. In the Tables of clotting-times recorded below the dosage has been expressed in milligrammes. This means milligrammes of a dried end-product of one or other batch of material, and is not meant to indicate any definite quantity of active substance.

In view of this uncertainty about the size of dose it is not possible to make any definite statement about the length of time that a single injection will protect a patient from hæmarthrosis or control an external hæmorrhage. Judging by such results as have so far been obtained, it seems likely that the spontaneous fluctuations of the disease affect this action considerably. Speaking in general terms a single adequate dose will protect from hæmarthrosis for a period varying from 4 days to 4 weeks, but will only control external bleeding for 4–24 hours. Much depends, however, on the word "adequate," and we have reason to believe that a dose which is adequate for a patient in a good period may be inadequate when he is in a bad period. In other words, the size of injection has to be controlled in each patient by observation on his clotting-time before and after injection. There seems to be no tendency to intravascular clotting however large the dose. It has in a few cases been possible, by obtaining a series of clotting-time estimations at intervals after an injection, to predict fairly closely when the next hæmarthrosis or bruise will occur. After its initial fall the clotting-time rises at first slowly and then more rapidly. At this latter juncture an internal hæmorrhage is imminent. In different patients there seems to be only a poor correlation between clotting-time and bleeding tendency, but if the foregoing observations turn out to be representative it may be possible to regulate intervals of dosage by such serial estimations.

The clotting-times were taken by a modification of the Dale and Laidlaw method.

A tube 4·6 cm. long and 3 mm. internal diameter is closed at one end with a small plug of plasticene or dental wax and a lead shot of 2 mm. diameter is put into it. Blood is drawn from a vein by means of a syringe and the tube filled completely to the exclusion of all air bubbles. The open end is then closed either with the finger or with plasticene and repeatedly inverted at a constant rate so that the shot falls backwards and forwards in the tube.

All observations were made at room temperature, and in any one patient the estimations before and after injection were carried out in the same place and under identical conditions. Clotting-times were measured from the time when blood began to flow into the syringe to the time when the shot ceased to fall when the tube was inverted. The clotting-times by this method are longer than when the smaller tube is used, and the differences between normal and hæmophilic persons are much wider. We think it important to use a method in which the shot is not stopped by a few strands of fibrin, for in hæmophilia bleeding often continues through an imperfect clot.

The following are clotting-times taken by this method from 11 normal persons :—

W.	4 mins.	H.	5.25 mins.
S.	4·5 „	Squire ..	4·5 „
F. M., jun. ..	5 „	Timperley ..	4·5 „ (1st test)
F. M., sen. ..	6 „	„ ..	4·0 „ (2nd „)
M.	4·75 „	Naish ..	5·5 „ (1st „)
T.	5·5 „	„ ..	5·5 „ (2nd „)
P.	3·5 „		

Irrefutable proof of benefit in a disease so remarkably fluctuant as hæmophilia is difficult to obtain, and the natural tendency of both doctor and patient is to err on the optimistic side. Periods of natural remission are bound to coincide sometimes with the administration of a hypothetical remedy, and only critical observation of a large number of cases will correct fallacies of premature deduction. No more claim is made at present than that favourable results have been obtained in those cases where it has been possible to keep patients steadily under treatment for a long period, and critically to compare their condition both before and after treatment. It is obvious that testing on a much larger scale and for a longer time will be necessary to establish the limits of the new remedy.

In order, however, to make our tests of efficiency more exacting, patients were in all cases encouraged to carry out those actions which previous experience had told them were likely to bring on painful joint swellings. For instance the man who had previously found that wielding a four-pound hammer for 15 consecutive minutes would almost always bring on a week's disability of the right elbow was, while under treatment, set to use a similar hammer for much longer periods (Case 6); and a boy (Case 4) of fifteen who had used crutches for many years, because bearing his weight on uneven ground was liable to cause one or other ankle to swell, was persuaded to jump from chairs, kick footballs, and run freely over all sorts of uneven ground. Patients were also encouraged not to spare themselves the knocks and cuts which by habit they had avoided.

Some patients would respond readily to such encouragements, but with others ingrained caution prevented the full application of our instructions.

In addition to these practical tests, it was thought desirable to carry out the more stringent test of dental extraction in certain cases where sepsis, decay, or undue retention of primary teeth made it otherwise advisable. In 11 tooth extractions in four patients no wool or plug of any description was used. Altogether 24 teeth have been extracted from six patients, and in only one case has it been necessary to resort to any adjuvant such as the local application of snake venom, or giving a blood transfusion (Case 7). The extraction of 5 teeth in this case was a very severe test and, moreover, it was realised after the event that certain errors in technique had been committed, details of which are given below. The hæmorrhage was by far the largest we have encountered, but it does not appear to have alarmed the patient unduly because he subsequently made arrangements to have 2 more teeth extracted. Unfortunately his wife's illness necessitated his returning to London before this could be done. These tests by means of dental extraction have been most instructive, for by observation of the surface of the gum and the stoppage of bleeding it has been possible to judge the rate of the action of the substance when given by either intravenous or intramuscular route; and also the length of time that a single dose remains effective. These observations tend to show that injection by the venous route begins to act rapidly (in some 5–15 minutes) but that the length of time during which a single dose retains its efficacy varies with the patient and his particular state at the time. The dose required to check oozing from the torn gums and to effect early healing of the tooth sockets is in general much larger than that required to ward off hæmarthrosis or bruising, and it has to be repeated at shorter intervals.

Another interesting observation which tends to demonstrate the efficacy of the injections is the fact that sometimes venepuncture, with a tourniquet in position above, before the administration of the first injection, or intramuscular puncture for the purpose of giving a first injection, is followed by the appearance of a superficial or deep hæmatoma of many inches' diameter; whereas similar manipulations, when the patient is under the influence of an adequate dose, cause no bruise. One patient who had his first four injections on four successive days showed a succession of diminishing hæmorrhages. After the first puncture of the right triceps there was a large deep hæmatoma extending almost from shoulder to wrist; the next puncture into the left triceps produced a hæmatoma of about 1 in. diameter, the third one of a centimetre, and the fourth no visible effects (Case 7). The influence of intercurrent infection, with a rise in temperature, in promoting a recurrence of bleeding in Case 5 is of interest, and the apparent control of temperature fluctuations by injections in Case 8 may not be without significance, although there has been no further chance of investigating this.

It must be emphasised that no claim is made to cure hæmophilia by the treatment suggested, but merely to control hæmorrhage and ameliorate the general condition during exacerbations of the disease and during minor operative procedures; in order to do this adequately repeated injections are necessary. Reference to the cases described below will show that widely varying amounts of material have been used to control hæmorrhage, and it is recognised that the quantities used in Case 4 were excessive; but on the other hand it is clearly shown that large doses may be given with impunity and with no fear of damage to veins or of intravascular clotting. There has so far been no evidence of a negative phase succeeding a course of injections, but this possibility must be borne in mind, although difficult to establish conclusively in view of the recognised fluctuant nature of the affection.

In the treatment of Case 7 certain errors of judgment were made, from which we have learnt much. First, the absolute necessity of a physiological test is apparent. Secondly, it is now realised that recurrence of the bleeding state may in some patients be so rapid that it is essential to have a large stock of injection material in hand, and to anticipate rather than wait for the recurrence if the patient is to be kept in first-class condition. Particularly is this so in the night when a few hours' bleeding may easily occur without attracting much attention. In this connexion we think it advisable that dental extraction should be carried out as early as possible in the morning so that the period of recurrence may be carefully noted before the day staff goes off. Thirdly, it emphasises the fact, which we had already appreciated to some extent, that the doses required to control external bleeding are larger and more frequent than those for internal bleeding.

Description of Cases

The following thirteen cases are not a selected group, but comprise all that have so far been treated by us.

CASE 1.—Aged 37. (Access by courtesy of Dr. J. Clark and of Dr. J. O'Callaghan.) Admitted C.G.H.* on March 7th, 1936; discharged on April 1st and treated since discharge. He is an orphan knowing little about his relations, and no family history of hæmophilia has been obtained. When 18 months old, after a cut on his forehead, he bled for three weeks. After this he was in and out of hospital throughout his childhood. He estimates that he has been in the S.R.H. between 40 and 50 times for swollen joints or external bleeding, and that his school attendances added together did not total more than 1 year out of the usual 8. During childhood and adolescence he had repeated joint swellings and subcutaneous hæmorrhages, either spontaneous or following slight injury, and there has rarely been an interval of two weeks without some manifestation of the disease. Bleeding from the gums has also been troublesome. Some slight improvement has been observed since the age of 20. He was employed during the war but lost more than half his working hours from disability, and he has not worked since.

On admission he was very pale; right elbow swollen and painful; hæmatomata over left wrist and middle finger and over right thigh. Dysphagia and pain in neck, with purple swelling of post-pharyngeal wall. Left ankle nearly ankylosed; movements very severely curtailed in right ankle and both knees, slightly impaired in left elbow.

Before treatment blood withdrawn from a vein gave no clot up to 72 hours in the tube used, and it was never possible to get any measure of clotting-time.

Treatment began on March 12th when 25 mg. was given intravenously. Subsequent injections are tabulated below. Improvement was definite and rapid; bleeding from the gums ceased and there have been no more joint swellings or pain. On April 3rd the proximal phalanges of his left hand were crushed by a door so severely he thought they were broken, but the subsequent bruise was insignificant. He has also had three or four cuts on the hand, which would previously have bled for a day or two but which have not bled for more than a few minutes. Between April 5th and 26th injections were deliberately withheld and observations made on clotting-time; these are given below. On the 26th a bruise 3 in. by 1 in. appeared on the forearm and injections were begun again; with this exception no hæmatomata have appeared since treatment began.

Date.	Clotting-time (mins.).	Injections (mg. intravenously).
Mar. 12	No clot in 72 hrs.	—
„ 12 (7 P.M.)	—	25
Mar. 13	10	—
„ 16	18	—
„ 17 (11.40 A.M.)	—	20
Mar. 17 (2.40 P.M.)	4½	—
Mar. 18	8	—
„ 20	10	—
„ 24	16	—
„ 24	—	100
„ 25	10	—
„ 27	14	—
„ 30	—	40
„ 30	11½	—
Apr. 5	15	—
„ 5	—	10
Apr. 6	5	Injections withheld.
„ 10	8	
„ 18	23	
„ 24	35	
„ 26 (10 A.M.)	100	
Apr. 26 (12 noon)	—	10
Apr. 26 (3 P.M.)	8	—
Apr. 27	14	—
„ 28	16	—
„ 29	18	—
„ 29	6	20
„ 30	12	—
May 5	22	—
Oct. 5	45	30
„ 6	18	—
„ 15	47	30 M.A.
„ 16	19	—
„ 19	27	—

M.A. = mucic acid derivative.

As there was evidence of sepsis at the roots of several teeth it was decided to attempt the removal of the worst. On May 23rd at 10 A.M. he was given 40 mg. intravenously and fifteen minutes later [2] was extracted. There was no immediate bleeding, but during his midday meal the socket bled for five minutes and about 1 oz. further was lost during the night. Injections of 40 mg. were repeated on May 24th and 25th. Bleeding ceased completely on the 25th and the total loss was estimated at 2–3 oz. On June 2nd at 10 A.M. 10 mg. was given intravenously and [3] was extracted. Another dose of 10 mg. was given at 9 P.M. Bleeding had completely ceased within twenty-four hours and the total loss was estimated at 1 oz. On June 5th at 11 A.M. 50 mg. was injected and [2] was extracted. Oozing occurred for the first six hours after extraction but none subsequently. Two more doses of 25 mg. each were given within the first twenty-four hours. On June 10th a small piece of alveolar bone was found broken off in the socket. This was extracted after a further injection and there was a little intermittent hæmorrhage during the next three days. No packing was placed in the socket after any of these three extractions. The clotting-time of this patient before the first injection was the longest of which we have any record.

CASE 2.—Aged 31. (Access by courtesy of Dr. O. C. Hudson.) One brother, aged 14, died in 1911 from bleeding after small wound of cheek. Another brother is a hæmophilic (Case 3). From the age of 2 years there have been painful swellings of joints, all limb joints having been involved at one time or another. The duration and severity of recurrences varied with general condition and the patient had "good" periods lasting 3–6 months in which joint attacks were mild and lasted only 12–24 hours; in "bad" periods the attacks lasted 4–14 days with intervals of about a fortnight. In April, 1936, he was getting towards the end of one of the worst periods he had ever experienced. There is the typical history of recurrent hæmatomata, and severe bleeding following minor injuries. Lifting heavy weights caused deep hæmorrhage into muscles. His school attendances totalled about 3 years of the normal 8. No improvement has been observed in adult life, except that there has been less bleeding from the gums. With his brother (Case 3) he has carried on a boot repairing business, but is liable to be off work for long periods.

He has medium pallor; the lower limbs are somewhat wasted. Movements of knees limited to about 30°; right foot fixed in position of plantar flexion and inversion.

Date.	Clotting-time (mins.).	Injections (mg. intravenously).
Apr. 17	30	—
„ 18	27	—
„ 19	29	—
„ 20	32	—
„ 23	40	—
„ 23	—	10
„ 23 (2 hrs. later)	14	—
Apr. 26 (9 P.M.)	21½	—
„ 29	31	—
May 3	40	—
„ 3 (later)	—	10
May 4	22	—
June 30	35	—
„ 30	—	30
„ 30 (2 hrs. later)	14	—
July 1	19	—
July 7	30	—
July 7 (40 mins. later)	—	20
July 8	17	—
„ 15	30	—
„ 15	—	20
„ 16	18	—
„ 20 (8 P.M.)	20	—
July 20 (9 P.M.)	—	25
July 20 (9.20 P.M.)	10	—
Oct. 5	65	—
„ 6	65	30 M.A.
„ 7	20	—
„ 15	40	30 M.A.
„ 16	18	—
„ 19	27	—
„ 24	40	30 M.A.
„ 25	23	—

Clotting-times were found to be about 30 mins. and injections were begun on April 23rd and given subsequently as shown below. Since that date there has been such complete immunity from symptoms as he has never before experienced. There have not been joint attacks of the mild variety which used to occur even in "good" periods. Heavy or prolonged muscular work has produced no deep swellings, and shaving cuts clot at once. Early in August he sustained a cut on the palmar surface of the right hand 1 in. long and ¼ in. deep. This bled for five minutes only. (Previously in a "good" period, such a cut would have bled for 3–4 days, even if bandaged and splinted. The scar of this cut is visible and substantiates his account of it.) On June 19th two upper canines were extracted. An hour before extraction the clotting-time was 33 mins. which is about his normal average without injection. An intravenous injection of 35 mg. of the substance was then given which reduced the clotting-time to 10 mins. Two hours after extraction there was a clot about the size of a pea in each socket and after this no further bleeding occurred.

* In these notes the following abbreviations are used:—
R.I.S. = Royal Infirmary, Sheffield.
S.R.H. = Sheffield Royal Hospital.
C.G.H. = City General Hospital, Sheffield.

On Oct. 20th he dropped a cobbler's last (4 lb.) from a height of about 4 feet on his second right toe and crushed the nail; next day the toe was swollen but no discolouration was visible. On the following day the nail was pulled off and there was no more bleeding than would be expected from such a raw surface in a normal person. On Oct. 26th the wound was healing and there had been no further bleeding.

CASE 3.—Aged 38 (see Case 2). (Access by courtesy of Dr. Hudson.) This man seems to have suffered from a milder form of the disease than his brother and his working capacity has been considerably greater. He has learnt to avoid joint swellings by careful movement; twists or jolts invariably cause some degree of swelling in a joint, which begins by a feeling of tightness and heat coming on suddenly in the affected part. "Good" periods have lasted 2 or 3 years, "bad" periods about 8 months. Occasionally there have been periods of rectal bleeding; he had a severe hæmorrhage in the alimentary tract in 1929, but has never been in danger of his life. As a child he only lost a total school time of about 1 year out of the usual 8, but during late adolescence he was frequently incapacitated by epistaxis and lost working time in later years.

Treatment was begun on April 20th. Prior to this, observations on clotting-time never showed it to have a value less than 40 mins. Like his brother he has experienced during treatment complete immunity from unfavourable symptoms, such as never before. There has been no feeling of tightness or heat in his joints; he can walk better and carry on his work with a greater feeling of confidence. He has often hit his left hand with the hammer so as to hurt himself without producing a bruise, and on one occasion, July 30th, he banged his right elbow heavily on the sewing-machine without any joint trouble following. On July 24th he cut his right thumb and blood spurted from the wound. After applying a bandage he resumed work immediately and in two days removed the bandage. (Previously such a wound would have necessitated loss of a week's work.)

Date.	Clotting-time (mins.).	Injections (mg. intravenously).
Apr. 15	60	—
„ 16	45	—
„ 17	40	—
„ 18	43	—
„ 19	40	—
„ 20	45	5
„ 21	30	—
„ 23	35	—
„ 26	47	10
Apr. 27	23	—
May 3	40	10
„ 4	18	—
Oct. 5	63	30 M.A.
„ 6	18	—
„ 15	33	30 M.A.
„ 16	16	—
„ 19	24	—

In this man certain teeth needed to be extracted because of sepsis and between June 18th and July 2nd a total of 6 were extracted under the influence of protective injections. On the 18th an upper canine was extracted after 25 mg. had been given and all bleeding had ceased within twelve hours. On the 24th an upper incisor was extracted after 45 mg.; one teaspoonful loss in first 12 hours and afterwards only a few drops. On the 29th two lower central incisors were extracted after 10 mg.; slight bleeding for 36 hours. Finally on July 2nd two lower lateral incisors were extracted after 50 mg.; apical artery in one spurting after extraction. Bleeding ceased in ten minutes and there was no more until nearly three days later (July 5th) when it started again rather profusely and was only finally checked on the evening of the 7th after four injections. Each injection was followed by almost immediate cessation, but recurrence took place some 12 hours later.

CASE 4.—Aged 15. Admitted to nursing-home from May 24th to June 14th by the courtesy of Dr. Hugh Ashby and Dr. G. B. Macgregor of Manchester. One brother is normal. A maternal uncle was a bleeder and died of bowel hæmorrhage aged 14. The patient has had frequent bruising from early infancy. Any thoughtless lifting of him causes a painful deep swelling in the muscles of the trunk. Even lying in bed has caused pain and inability to straighten the back. Swelling and pain in joints began at the age of 4 and these attacks have subsequently been more frequent; walking on uneven ground produces joint attacks and he has used crutches for some years; he goes to a private school where he has a special chair. Has had intestinal and renal bleeding; there was an attack of hæmaturia for ten days previous to admission. He has been carefully shielded from injury but small cuts have bled profusely and on one occasion a blood transfusion was necessary. Milk teeth have been carefully preserved to prevent danger of hæmorrhage.

The lower limbs are much wasted and there is limitation of movement in left knee. Considerable hæmaturia.

His clotting-time on May 24th was 26 mins. At 3 P.M. he was given an injection of 10 mg. intravenously and at 5 P.M. the clotting-time was 12 mins. Intravenous or intramuscular injections were repeated at suitable intervals and he has been gradually trained, first to walk without crutches, and then to jump off chairs, then to kick a football and to run over uneven ground in the garden of the nursing-home. The muscles of his legs were weak from disuse, but being a boy of adventurous spirit he was quickly trained to these exercises. One of us (A. E. N.) saw him slip badly over a grating in the path and twist his leg, without any hæmarthrosis occurring.

Six carefully filled temporary teeth were preventing the satisfactory eruption of the permanent dentition. His parents wished to have these removed if possible. Preparatory to extraction an intramuscular injection of 10 mg. was given on June 2nd and repeated on the 3rd. On the 4th his clotting-time was five mins. and $\frac{4}{}$ was removed. Further injections of 10 mg. were given on June 5th, 6th, 7th, and 8th. During these four days a clot kept forming in the socket, and by the time 12–24 hours had elapsed each clot was sufficiently big to incommode him for taking his meals and talking. It was then removed and another clot slowly formed. By June 8th all bleeding had ceased. The total loss was estimated at about 2 oz. The clotting-time was kept between 5 and 8 mins. during the period June 4th to 8th. No packing was used in the socket.

After his return home to Manchester he was given intramuscular injections by his medical attendant, Dr. Macgregor, at fortnightly intervals, and indulged in all forms of activity. About the middle of July it was reported that he had a slight swelling of the left knee. Owing to calls on the material produced and difficulties in manufacture it was not convenient to readmit him then and Dr. Macgregor was advised to give him an injection every week, which seemed to keep him from further trouble. On Sept. 13th he was readmitted (five days after his last injection by Dr. Macgregor). His clotting-time was taken on four successive days and was found to be rising rapidly.

Sept. 14th = 32 mins.	Sept. 16th = 70 mins.
„ 15th = 50 „	„ 17th = 120 „

It was likely that he was now in a "bad" period due to a natural fluctuation and that stronger and more frequent injections would be necessary to render him immune. On Sept. 30th a bruise appeared on leg. A course of treatment was therefore carried out as shown below and on Oct. 13th, after a preliminary injection intravenously of 50 mg., $\frac{4}{}$ was extracted. There was slight oozing for about 30 mins. and again later in the afternoon, but this ceased after a further injection of 30 mg. at 5 P.M. On Oct. 14th a small clot over the socket separated but later re-formed; 30 mg. was given intravenously and no further bleeding occurred.

Date.	Clotting-time (mins.).	Injections (mg. intravenously).
Sept. 18	—	15
„ 20	30	—
„ 22	30	—
„ 25	—	10
„ 27	23	—
Oct. 1	45	—
„ 4	—	20
„ 5	30	20 M.A.
„ 6	28	25 „
„ 7	—	20 „
„ 8	28	20 „
„ 9	28	20 „
„ 11	18	—
Oct. 12	—	20 M.A.
„ 13	15	50 „ / 30 „
„ 14	—	30 „
„ 19	40	40 „
„ 20	5	30 „
„ 21	—	50* „
„ 23	—	30 „
„ 25	—	20 „
„ 26	6	60 „
„ 29	—	40 „
„ 30	3	50 „
„ 31	—	50 „

* Intramuscular injection.

On Oct. 19th the clotting-time was 40 mins., but after 40 mg. intravenously 3| was extracted. This was followed by slight oozing, but a clot soon formed and there was no further bleeding. On the 29th |4 was extracted after 40 mg. intravenously; no bleeding occurred but a large clot had formed next day suggesting oozing below clotted surface. This was removed, 50 mg. was given intravenously and a small clot rapidly re-formed, but on Oct. 31st this had grown to inconvenient size and was removed; another injection of 50 mg. was given and there has been no further bleeding.

CASE 5.—Aged 43. Grandfather known as hæmophilic; died from hæmorrhage after fall at age of 44. Youngest brother died 1930 from Hodgkin's disease. Swollen joints after slight falls. Severe hæmorrhage from wound in mouth at 6 years; ill for 6 weeks. Tooth extracted at 16 years; bled for 4 days. Tooth extraction at 23 years followed by blood transfusion. History of repeated joint swellings and pain, and prolonged hæmorrhage from minor cuts. Had heard from Case 4 of treatment and came to have four teeth extracted.

Sept. 22nd: Clotting-time 12 mins. Sept. 23rd: Clotting-time 11 mins.

Sept. 24th: Clotting-time 15 mins. at 11 A.M. Injection 50 mg. (5 c.cm.) intravenously at 11.30 A.M. At 4 P.M. clotting-time 4 mins.

Sept. 25th: Clotting-time 6 mins. at 11 A.M. Injection 50 mg. (5 c.cm.) at noon. At 2 P.M. |4·5 extracted under gas. At 10 P.M. 10 mg. given intravenously.

Sept. 26th: Total loss of blood since extraction about 2 oz.; 10 A.M., 50 mg. intravenously; 11 P.M., 20 mg. intravenously. No bleeding during day.

Sept. 27th: 10 A.M., clot size of tip of thumb over sockets removed; 50 mg. intravenously. Slight oozing occurred but stopped after further injection at midday.

Sept. 28th: Clotting-time 12 mins; no further bleeding occurred. Sept. 29th: Drove 30 miles by car.

Oct. 5th: 50 mg. intravenously 11 A.M. |8 extracted under gas 3 P.M. No bleeding. Patient up and about and had normal meals.

Oct. 8th: 50 mg. intravenously 11 A.M. 4| extracted under gas 2 P.M. No bleeding.

Oct. 9th: 50 mg. intravenously. No bleeding; sockets all dry. Patient had kept a wool plug in the sockets 4| and |8 but this was merely stained with blood; he had normal meals and was not in bed.

Oct. 10th: 50 mg. intravenously. Drove home to Manchester. Oct. 12th: "A little bleeding"; Dr. Macgregor gave 50 mg. intravenously which checked bleeding.

Oct. 14th: Caught a chill when fishing; temp. 101° F. Bleeding began from 4|. Drove home 50 miles. Oct. 15th: Dr. Macgregor gave 50 mg intravenously. Oct. 16th: Temp. normal; firm clot in socket.

This patient has volunteered the information that cuts when shaving have not been troublesome since treatment began; before treatment such cuts necessitated changing collar two or three times.

CASE 6.—Aged 29. Admitted S.R.H. on May 12th by the courtesy of Dr. Dorothy Hare of the Royal Free Hospital, London. Patient is the third of six children of whom the four elder are males. The eldest died at 2 years, cause unknown. The second was a known bleeder and died at 14 from a pin-prick in the mouth. His youngest brother, aged 20, is a bleeder but rather less severely than the patient, and he has managed to retain employment so far. One male nephew died at 10 days old of unknown cause.

Since the age of 2 has had painful swellings of various limb joints at intervals of a week to two months, arising spontaneously or after slight injuries. Using a 4 lb. hammer for 15 consecutive minutes causes a week's disability of the right elbow. Often bleeds from nose and gums and has been unable to brush his teeth; has to be extremely careful when shaving. About 8 months ago had gastric hæmorrhage and hæmaturia and during this attack had four blood transfusions in the Royal Free Hospital. Had recurrence of gastric hæmorrhage about 6 weeks ago.

Has marked wasting of muscles of all limbs and considerable limitation of movement in most joints. The first injection was given on May 16th, followed by others on the 22nd and 30th; since his return to London the treatment has been continued. During treatment he was urged to carry out exercises and gradually his immunity from joint swelling gave him confidence so that during his stay in hospital he was able to use the four-pound hammer for periods of 40 mins. without mishap. After his discharge on June 4th he did no work for 4 weeks, but has been cobbling since. He has used the hammer regularly for

Date.	Clotting-time (mins.).	Injections (mg. intravenously).
May 13	34	—
„ 14	39	—
„ 15	36	—
„ 16	—	30
„ 17	12	—
„ 22	19	—
May 22	—	30
„ 23	6	—
„ 30	20	—
„ 30	—	30
June 1	15	—

periods of half an hour at a time without harm to the right elbow, but on three occasions the left shoulder, which is liable to a severe jar if the hammer mis-strikes, has been disabled for a period of three days each time. This is the joint previously liable to mishaps when lying on it in bed. He has had several minor cuts while shaving which have not bled as they always used to do. He says he has greatly improved in general health and all joints except the left shoulder have been freer and less painful than before.

CASE 7.—Aged 39. Admitted to S.R.H. on July 2nd by courtesy of Dr. R. G. Macfarlane of St. Bart.'s Hospital. Youngest of family of seven. Out of three brothers, two have been bleeders. At 2 years bled for three to four weeks from cut lip. From 7 to 14 years went through a bad period of joint trouble and as an average attended school only two weeks out of every seven; ankles, knees, elbows, and shoulders mainly affected. From 12 years periodic hæmorrhage from kidneys began which has lasted till now. This has usually recurred about once every two years and lasted about two months. When 24 years old he bled from kidney continuously for nine months. At 17 had severe affection of right knee and was laid up for three months; this joint then became permanently fixed in a semi-flexed position. At 36 extremely severe internal bleeding; vomited two pints of blood; nearly died; blood transfusion. At 37 occasional fits (about 12 in all). (A hæmophilic brother started fits at 25 years old.)

Rather melancholic; general nutrition fair; muscles of limbs considerably wasted. Limitation of movement gross in right knee, moderate in both elbows and slight in wrists and ankles; other joints show crepitations. In the right knee the patella is dislocated outside the external condyle and there is gross distortion of bone position. He is able to walk with the aid of crutch or stick.

Many teeth were decayed and had been giving trouble and it was decided to remove 5 of them after a series of prophylactic injections. The first injection into the right triceps produced a large deep hæmatoma, the swelling extending almost from shoulder to wrist and under the annular ligament to the dorsum of the hand. A similar injection next day into the left triceps caused a hæmatoma of about 1 in. diameter, while two further injections on succeeding days were followed, the one by a bruise about 1 cm. in diameter, the other by no obvious swelling or discolouration. On July 16th an injection of 20 mg. was given and 5 teeth extracted. During the rest of that day bleeding was inconsiderable but during the night and the following day the hæmorrhage increased, and could not be checked by intravenous injections. The material used for these was from a fresh stock whose activity had not been tested on cats and it was found subsequently to be inert. (Demand for the substance at this time was so great that facilities for production were taxed to their utmost, although batches in various stages of preparation were always available.) Bleeding was temporarily decreased by 10 mg. of a previous batch and a fresh stock prepared hurriedly. This latter, however, through haste in preparation contained some potassium nitrate which caused sufficient pain on injection intramuscularly for the patient to refuse further injections. On July 20th his

hæmoglobin had fallen from 94 per cent. to 62 per cent. and his pulse-rate had risen to 120. It was therefore considered advisable to apply viper venom locally. Despite this local treatment there was further loss of blood, but a purified batch of material being now available the hæmorrhage was stopped by intravenous injections given each day. After each intravenous injection the bleeding stopped for several hours. On July 23rd all bleeding ceased except for a recurrence of oozing from one socket. A blood transfusion of 500 c.cm. was given for the treatment of the anæmia and subsequent recovery was uneventful.

CASE 8.—Aged 12. (Access by courtesy of Mr. T. B. Mouat.) Admitted R.I.S. on Jan. 24th. First cousin (Case 12) is a bleeder. No other bleeder known in the family. Recognised as a bleeder from infancy. First serious bleeding at 10 months old. Has been on five separate occasions in R.I.S. and on one occasion in the S.R.H. for severe bleeding, blood transfusions being found necessary three times. Epistaxis has been very frequent since 1 year old and gum bleeding not uncommon. Various joints have been swollen and on one occasion there was intestinal hæmorrhage.

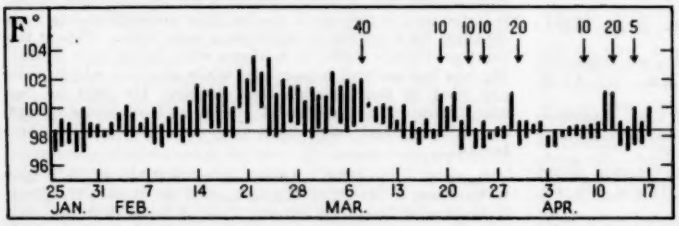


Chart showing daily temperature range in Case 8. Figures at top indicate dosage in mg.

He was admitted to the R.I.S. on Jan. 24th for a fracture in the middle of the right thigh which had followed a fall while playing. There was a large hæmatoma high up on the inner aspect of the thigh which was apparently an extension from hæmorrhage near the site of the fracture. An extension apparatus was applied. His condition began to deteriorate and it gradually became evident that the hæmatoma had become infected. He had one blood transfusion on Feb. 18th. On March 4th the hæmatoma was incised and began to discharge a mixture of blood and pus from a sinus. A pure growth of hæmolytic streptococci was obtained from the discharge. The extension apparatus had to be discontinued. With the progress of the infection the temperature gradually became higher and more continuous. For the first nine days after admission there were only three brief rises with a maximum of 100° F. From Feb. 3rd to 14th it was more continuously raised but still not above 100·2°. After this for the next twenty-four days from Feb. 14th to March 8th it had a much higher range, reaching a point between 101° and 103·8° on every day except two. (See Figure.)

Date.	Clotting-time (mins.).	Injections (mg. intravenously).
Mar. 8	Not completely clotted in 90 mins.	—
„ 8 (7.30 P.M.)	—	40
Mar. 9	1¾	—
„ 19	12	—
„ 19	—	10
„ 21	4¾	—
„ 23	7	10
„ 25	12	—
Mar. 25	—	10
„ 30	9	—
„ 30	—	20
Apr. 8	9	10
„ 12	—	20
„ 15	—	5
Sept. 7	35	30
„ 8	6	—
Oct. 4	30	10
„ 5	20	—
„ 17	33	20 M.A.
„ 19	8	—

On March 8th at 7.30 P.M. an injection of 40 mg. of the substance was given intravenously. The temperature immediately fell to a lower level (maximum 100·2°) and continued slowly falling till March 19th when it had been normal for three days. Bleeding from the hæmatoma sinus had ceased on March 10th and there was a gradual improvement in his general condition. An injection of 10 mg. was followed by cessation of bleeding, but not by a satisfactory fall of temperature, so another 10 mg. was given on March 23rd and again on the 25th. The temperature remained normal for six days up to the 29th. Another injection on the 30th was followed by twelve days of normal temperature and subsequently there were only two slight rises. The extension apparatus was replaced on April 8th and the progress of the patient has been steadily towards complete recovery. On July 26th the patient extracted a milk tooth and the subsequent bleeding stained two handkerchiefs. He has had injections from time to time since his discharge from hospital and now appears in good health.

CASE 9.—Aged 21. Treated as an out-patient. Has history of joint swellings beginning at the age of 5 years; hæmatomata follow slight injury. The disease has shown a rhythm with 4–6 weeks' intervals between periods of disability lasting 10–14 days. At 8 years four loose milk teeth extracted; bled for 3 weeks and nearly died. Up to 15 years attacks used to prevent walking for a large part of the year, but since then has only lost about a quarter of his working time.

A small, thin man with pale, sallow complexion. Shows great caution in his movements and is afraid of being handled.

As this patient was not at the time complaining of any serious symptoms and was actually working at his usual employment he was utilised mainly to test the effect of injections on his clotting-time. The first venepuncture with tourniquet was followed by a hæmatoma measuring about 8 in. by 5 in. with its centre at about the point of puncture. After the first injection further manipulations of the same nature were no longer followed by hæmatomata. While under the influence of the injection with a low clotting-time he was encouraged to subject himself to the sort of knocks or jolts which experience had taught him would bring on bruises or joint swellings. He was not a very good subject in this respect as he was naturally timid and we cannot state from observation that there was any obvious improvement on his former condition. On one occasion during the course of treatment the left elbow became slightly stiff five days after the last injection had been given. From April 3rd to May 5th he was deliberately kept without an injection and at the end of that period when the clotting-time was rising steeply two hæmatomata appeared and the gums began to bleed. He has volunteered the statement that his capacity for walking has been 50 per cent. better since the injections have been started.

Date.	Clotting-time (mins.).	Injections (mg. intravenously).
Mar. 24	110	30
„ 25	7	—
Apr. 3	12	—
„ 3	—	10
„ 4	5	—
„ 12	12	—
Apr. 16	14	—
„ 20	18	—
„ 27	23	—
May 5	75	—
„ 5	—	60

CASE 10.—Aged 16. Admitted to S.R.H. on July 7th by courtesy of Dr. A. G. Ogilvie, Newcastle-on-Tyne Royal Infirmary. Two maternal uncles hæmophilic; two brothers and two sisters normal. At 2 years bled from cut lip for two days; since then frequent swellings of ankle- and knee-joints. Occasional epistaxis. His school attendance has been about two-thirds of the maximum.

Date.	Clotting-time (mins.).	Injections (mg. intramusc.).
July 7	30	—
„ 12	—	5
„ 15	10	—
„ 20	—	5
July 25	30	—
„ 27	—	20
„ 30	8	—
„ 31	—	20

Pale undersized boy; looks some three years below his age. The only joints noticeably affected are the knees. The muscles of the right lower limb are markedly wasted and those of the left slightly. Hæmoglobin 70 per cent., with 5,000,000 red blood-cells and 5500 white blood-cells; anisocytosis and poikilocytosis present.

This boy was admitted during a period when he was comparatively well and no striking change in condition was noted.

CASE 11.—Aged 13. Admitted to S.R.H. on July 7th by the courtesy of Dr. Ogilvie of Newcastle-on-Tyne. Youngest of five of whom three were males. Eldest brother bled to death after dental extraction; the other brother normal. One male cousin died of bleeding. At 2 years had two blood transfusions for bleeding from mouth. Somewhat later a cut of right hand caused bleeding for some weeks. No external bleeding lately except oozing from the gums, which has been more or less continuous for years. Regular recurrent swelling of joints. Usually two months' interval between each attack. Last attack in right knee, two weeks ago. A week or two's disability with each attack.

Thin delicate-looking boy with small chest. Bleeding from gums. Numerous bruises of arms and legs. Both knees swollen, especially the left; limitation of flexion in both and some limitation of extension in the left. Considerable limitation of movement in the right elbow and left ankle.

The first injection into the right triceps caused considerable deep hæmatoma. He remained well while in S.R.H.

Date.	Clotting-time (mins.).	Injections (mg. intramusc.).	Date.	Clotting-time (mins.).	Injections (mg. intramusc.).
July 7	34	—	July 21	14	—
„ 9	37	—	„ 25	35	—
„ 15	—	15	„ 27	—	30
„ 16	9	—	„ 30	15	—

After his return to Newcastle he was given two injections weekly by Dr. Ogilvie. Three days after the second injection he had a severe deep hæmorrhage. This is the only case in which this has occurred. We are inclined to attribute it to the "non-keeping" quality of the substance prepared by the first method given. It may of course have been due to a severe fluctuation in the disease. The parents did not wish further treatment.

CASE 12.—Aged 9 years. First cousin of Case 8. At 8 months bled severely after injury to ear. During early childhood often had severe headache. At 7 years after a dental extraction was found next morning in a bed "saturated with blood"; admitted to S.R.H. and kept in for six weeks; blood transfusion; nearly died. At 8 years ear bled for 14 days; tongue bled after a cut for 10 days; hæmorrhage into testicles. Epistaxis lasting a week.

Date.	Clotting-time (mins.).	Injections (mg. intravenously).	Date.	Clotting-time (mins.).	Injections (mg. intravenously).
Apr. 5	90	—	Apr. 14	8	—
„ 5	—	15*	„ 20	14	—
„ 6	6	—	„ 29	18	—
„ 8	8	—	„ 29 (later)	—	20

* Followed by vomiting and shivering.

He was first under observation on April 5th. He was given two injections and his case is quoted only to show the effect of the first on his clotting-time.

CASE 13.—Aged 20. Admitted to S.R.H. on July 2nd by courtesy of Dr. Macfarlane of St. Bart.'s. Elder brother died of a cut at 18 months old; another brother died 6 days after birth (cause unknown). History of frequent hæmatomata since the age of 5 months. At 7 years had hæmorrhage into tissues of neck after extraction of milk tooth, and was in Chelsea Children's Hospital for 3 weeks; given horse serum once a month afterwards. From 7 to 14 years lost about a quarter of his school attendance time. After age of 15 had frequent joint attacks, and was in St. Bart.'s Hospital for 8 weeks on one occasion with hæmorrhages into left knee, right groin, and neck; treated with serum and transfusion. Has subsequently had transfusion on three occasions. He thinks the disease tends to go in fortnightly cycles,

Date.	Clotting-time (mins.).	Injections (mg. intramusc.)	Date.	Clotting-time (mins.).	Injections (mg. intramusc.).
July 3	33	—	July 10	15	—
„ 3	—	10	„ 17	35	—
„ 4	—	10	„ 17	—	20
„ 5	14	—	„ 18	10	—
„ 9	23	—	„ 26	—	10
„ 9	—	10			

and when the bleeding tendency is present he has a craving for sugar and salt, and feels lethargic and tired.

Fairly good condition; muscles well developed. Able to walk some miles. Left elbow is most affected joint. Extension is limited by 30°. Right knee flexion is limited by about 20°.

This man was at the time of arrival in such good health that we did not observe any objective improvement, but the patient himself thought there was improvement after the injections.

Summary

A description is given of the preparation from egg-white of a substance or substances which, on intravenous or intramuscular injection, reduces the clotting-time of the blood and controls hæmorrhage in hæmophilics.

This substance, even when injected in large quantities, has never been found to produce either local or general intravascular clotting; nor does it appear to cause any other disability.

Repeated injections are necessary to control the tendency to hæmorrhage in hæmophilia.

A derivative of mucic acid has been found to have similar properties.

We wish to express our deep sense of gratitude to Alderman J. G. Graves of Sheffield, whose generosity has made it possible to continue this work. The animals used for test purposes were paid for by a grant from the Medical Research Council to one of us (G. A. C.). We wish also to thank Messrs. J. Naish, B.A., and J. Squire, B.A., for their valuable assistance in the preparation of material.

REFERENCES

1. Macfarlane, R. G., and Barnett, B.: THE LANCET, 1934, ii., 985; Barnett, B.: Proc. Roy. Soc. Med., 1935, xxviii., 1469.
2. Macfarlane, R. G.: St. Bart.'s Hosp. Rep., 1935, lxviii., 229.
3. Grant, L.: THE LANCET, 1904, ii., 1279.
4. Birch, C. L.: Jour. Amer. Med. Assoc., 1932, xcix., 1566.
5. Stetson, R. P., et al.: Ibid., 1934, cii., 1122.
6. Pickering, J. W.: THE LANCET, 1929, i., 1242.
7. Cambrook, J. D.: Proc. Roy. Soc. Med., 1933, xxvi., 962.
8. Dam, H., Schönheyder, F., and Tage-Hansen, E.: Biochem. Jour., 1936, xxx., 1075.
9. Schönheyder, F.: Ibid., 1936, xxx., 890.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION.—An afternoon course in venereal diseases will be given at the London Lock Hospital from Nov. 23rd to Dec. 19th; a course in proctology at St. Mark's Hospital from Nov. 30th to Dec. 4th; a course in thoracic surgery at the Brompton Hospital from Dec. 7th to 12th; and an afternoon course in dermatology at the Blackfriars Skin Hospital from Dec. 7th to 19th. Week-end courses will be held as follows: general surgery at the Princess Beatrice Hospital (Nov. 14th and 15th); infants' diseases at the Infants Hospital (Nov. 21st and 22nd); chest diseases at the Brompton Hospital (Nov. 28th and 29th). A clinical and pathological course for M.R.C.P. candidates will take place at the National Temperance Hospital on Tuesdays and Thursdays, at 8 P.M., from Nov. 24th to Dec. 10th.

ANAL FISSURE

By J. W. Riddoch, M.C., M.B., F.R.C.S. Edin.
HON. SURGEON TO THE MIDLAND HOSPITAL, BIRMINGHAM

THOUGH anal fissure is a simple condition, which can be successfully dealt with by a variety of methods, a glance through articles on the subject does not show that unanimity in regard to its cause, its chronicity, and the rationale of its cure that one might expect.

The explanation of its cause most often encountered is the time-honoured one originated by Ball—namely, a tearing down of one of the anal valves by a scybalous mass, the torn valve forming the well-known sentinel pile. Very often, however, no such pile is present. This theory has been modified by the suggestion that a small submucous fistula follows a slight tear in the region of an anal valve, and that the resulting infection burrows downwards in the subcutaneous tissue of the pecten, thus forming a small blind internal fistula, the overlying skin of which later gives way. A more recent view is that fissure is associated, at least in the great majority of cases, with a "pecten band," which is torn by an unusually hard scybalous mass and some writers state that in the operative treatment of fissure this band should be looked for and divided.

The chronicity is usually ascribed to spasm of the anal muscles, though in old-standing cases the excessive production of fibrous tissue due to infection and to repeated tearing alternating with attempts at healing is said to play a part. The lack of drainage mentioned by some writers suggests that infection is a contributory factor.

Before these matters are discussed, it will be necessary to consider some points in the anatomy of the anal canal.

ANATOMY

A careful study of the musculature of the anal canal has been reported by Milligan and Morgan,[1] and I have confirmed the points relevant to this discussion.

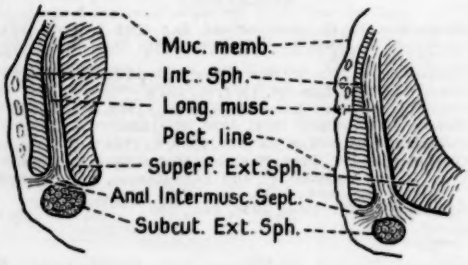


FIG. 1.—A. Lateral section of the anal canal. B. Section through the region of the posterior commissure.

The canal is about 1½ in. long. The upper two-thirds, which is lined by mucous membrane, need not concern us here; it is surrounded by resilient muscle, and is easily dilatable. The lower third, or ½ in., of the canal is lined by skin, which is thinner than that found in most other parts of the body. The junction of the skin and mucous membrane is marked by the anal valves, which, from their resemblance to the teeth of a comb, give it the name of pectinate line. The skin below this, for a distance varying from 3 to 9 mm.,[2] is smooth, and has been given the name of the "pecten." Immediately below the pecten the skin is firmly attached to a tendinous ring, called by Milligan and Morgan the "anal intermuscular septum." This ring separates the internal sphincter muscle above from the subcutaneous portion of the external sphincter below, and into it is inserted the fibrous prolongation of the longitudinal muscle of the anal canal, from which, in fact, it is derived (Figs. 1 A and B). Below the ring the skin again becomes loose and thrown into longitudinal folds, overlying the subcutaneous external sphincter.

Outside the ring lie the fibres of the superficial external sphincter, and these, unlike the fibres of the deep and subcutaneous portions of the external sphincter, have an elliptical disposition. They arise in front from the central point of the perineum and pass backwards to be inserted into the coccyx and to the anococcygeal raphe passing forward from it. In front they form a wide angle while behind, except for a few fibres which encircle the bowel, they come together at an acute angle (Fig. 2). This superficial sphincter is the only muscle lying outside the septal ring, and the support it gives to the ring under conditions of overstretching will be least efficient in front and behind, and this lack of support will be greatest posteriorly (Fig. 1 B).

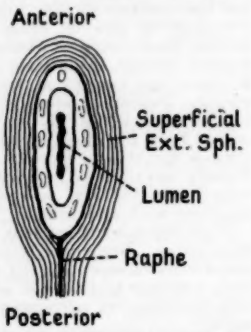


FIG. 2.—Transverse section at level of anal intermuscular septum.

PATHOGENESIS

The part of the anal canal surrounded by the anal intermuscular septum, consisting as it does mainly of fibrous tissue, is characterised by rigidity, and, as mentioned above, is relatively poorly supported by muscle behind, and to a less extent in front. It is a matter of ordinary clinical experience that normal anal canals vary in diameter in different people; if a canal is on the narrow side and has to deal with the passage of unduly large and hard scybalæ, the part most likely to suffer damage is the most rigid part, and this part is most likely to sustain injury where it has least support. It is suggested that traumata of this nature occur and lead to small extravasations of blood and the formation of fibrous tissue with subsequent contraction. It is at least possible that in the earlier stages the damage is subcutaneous, but sooner or later a ridge of fibrous tissue forms, usually behind, or much more rarely in front, and rupture of this ridge by a hard fæcal mass is likely to result. In this way a fissure is formed. The great majority of fissures are well known to lie posteriorly. Of 67 cases, 63 were posterior, 3 anterior, and 1 was on the left side. When these changes are pronounced and occur in front as well as behind, the whole septal ring is contracted and forms a definite stricture. In such a condition there may be no fissure when the patient keeps the stools in a semi-fluid state by the continual taking of aperients.

Miles[3] had a different explanation for non-traumatic strictures of the anal canal. He stated that the fibrous tissue was laid down under the pecten, and that it was the result of chronic venous congestion due to long-standing hæmorrhoids or possibly to chronic constipation of the rectal type. This explanation, however, is not altogether satisfactory. Cases of hæmorrhoids of 20 or 30 years history are frequently seen without any pecten band being present; and, as admitted by Abel,[4] "the pecten band may exist to a marked degree without any other pathological condition being found in the rectum or anal canal." In a figure in Abel's article a "pecten band" is

illustrated, but it is shown to lie, not on the pecten area, but immediately below the internal sphincter in the line of the anal intermuscular septum. The same author also ascribes its presence in some cases to long-continued spasm, but does not indicate the cause of the spasm.

Only in very advanced cases is there a definite ring of fibrous tissue; in the great majority contracture occurs only in the posterior commissure. This is what is usually found in cases of fissure, and it is interesting to note that both Miles and Abel recommend division of the pecten band in the right *posterior* segment. On the other hand, where a complete ring of fibrous tissue is encountered—as a result, for example, of previous operation in this region—several sections of this ring may be necessary at different points in its circumference to obtain satisfactory dilatation of the canal.

CLINICAL FEATURES

If the above theory of the causation of anal fissure is accepted, the various features of the condition can be readily explained. When a fissure is small it is seen to lie just above the subcutaneous sphincter, and though its upper part may encroach on the pecten, its centre is opposite the septal ring. The floor consists of fibrous tissue formed in attempts at repair, and laid down in a transverse direction in response to stress; like fibrous tissue elsewhere, it is poorly supplied with blood-vessels, and has no granulations. At the upper and lower limits of the fissure the vascularity of the tissues is less interfered with, and from these areas more active attempts at repair take place. Skin grows from these situations over the fissure, but is detached from its floor by the opening up of the lesion during defæcation, though still remaining attached at the ends. The loosened flaps become completely epithelialised by the growth of skin round their deep surfaces, and this results in the little tags which are often seen at the upper and lower ends of the lesion. Sometimes a tiny blind internal fistula is found to extend into the lower tag. This has been regarded as the remains of a fistula which was the original cause of the fissure, but can more reasonably be ascribed to the healing process being partially successful, the edges of the lower tag having retained an anchorage at the edges of the fissure at its lower end.

The sentinel pile is exactly like any other external pile to be found at any part of the anal outlet, whether a fissure is present or not. I have seen one fissure where there lay exposed in its lower part a recently thrombosed vein. Fibrosis in the tissues immediately surrounding the fissure will involve the neighbouring veins, and extra strain will be liable to tear a vein and cause thrombosis; this clotting is likely to spread downwards to a variable extent, causing an ordinary thrombosed external pile or hæmatoma ani, the end-result being a tag of skin.

CHRONICITY

The well-known tendency to persistence of anal fissure can be ascribed to two factors. First, there is the narrowing of the anal canal at the septal ring, which is only wide enough for its physiological purpose when the fissure is fully opened out. Any healing-in of the fissure is immediately followed by strain on the ring. Secondly, the poorness of the blood-supply prevents the formation of good granulation tissue, and if this is formed at all, it is liable to be rubbed off by the stools. Hilton,[5] discussing the treatment of fissure, has stated that "the motion should be kept soft and pulpy, so that the sphincter may not be too widely opened during defæcation, nor the ulcer exposed to the friction of a large or hard motion."

Spasm of the sphincters no doubt plays some part, inasmuch as the friction between the motion and the raw surface of the fissure is increased, but certainly is not a decisive factor. It can be completely got rid of by the repeated injection of anæsthetic solutions for periods of weeks or months, and yet healing may not take place. All fissures do not have that exquisite tenderness and resultant spasm usually referred to in text-books, and occasionally a fissure having the typical appearance of a chronic lesion is met with where pain and tenderness are negligible, and spasm is completely absent. In such cases attempts at healing have ceased, and the fibrous tissue has developed to such an extent in the base of the fissure as to withstand any overstretching of the canal. A balance has been struck.

TREATMENT

Healing of a fissure can be obtained by:—

(1) Avoiding overstretching of the canal either by widening the canal at the septal ring so that there is ample room for the motions to pass; or by regulating the stools so that they are soft and do not stretch the canal unduly.

(2) Stimulating healing by the application of irritant substances to the surface of the fissure, or injecting them below its surface, thus increasing the blood-supply.

A combination of methods may of course be employed.

Conservative measures.—The simplest treatment is to keep the motions very soft with liquid paraffin or mild aperients. This is automatically adopted by the patient when symptoms of a fissure appear, and no doubt many fissures heal in this way without coming under the care of a medical man. Fissures which are not very indurated are sometimes seen to heal during the injection treatment of hæmorrhoids, during which time the state of the motions claims a good deal of the patient's attention. In older books much is said about the use and composition of enemata, the net result being the avoidance of anal distension. The application of caustics used also to be discussed a good deal, the object of which was to destroy sensitive nerve-endings and to coagulate the floor of the ulcer. Their chief action was, no doubt, to increase the blood-supply by their irritant action and so promote vigorous granulation tissue, which would be less likely to be swept away by the stools. These measures, however, have always been regarded as only partially successful, and are not stressed in modern teaching.

Operative treatment.—The operative measures advised for the treatment of fissure all involve, by design or accident, solution of continuity of the ring of tissue forming the anal intermuscular septum. "Stretching the sphincter," which means stretching the anal canal, obviously does this. So do excision of the fissure and division of its floor. Division of "the sphincter" is recommended by some authors, though what is meant by "the sphincter" is usually left rather vague. If all three parts of the external sphincter were divided, no doubt the fissure would heal, but incontinence would follow. Illustrations usually suggest that what is divided is the subcutaneous portion of the external sphincter and the fissure itself, and so the septal ring. On the other hand, some writers state that division of the sphincter is unnecessary, and should never be done, only the fissure itself being subjected to the knife. Any of these methods will result in the healing of a fissure, and all involve section of the fibrous tissue in the

neighbourhood of the lesion, and restoration of the dilatability of the lower part of the anal canal by division of the intermuscular septal ring.

Injection treatment.—The injection of oily solutions of anæsthetics, containing a percentage of alcohol, was introduced in America by Yeomans in 1927, and later Gabriel [6] in this country reported results following the use of a similar solution known as "A.B.A." Gabriel found the method good for recent fissures, and in more chronic ones obtained healing in a "considerable proportion" of cases. More recently, Morgan,[7] using a modified solution of his own, claimed good results in recent fissures only.

In my series of 45 cases that were treated with A.B.A., 18 healed after one injection and 4 after two treatments; in 14 cases the notes are incomplete, but most of these completed a course of injections for hæmorrhoids and were discharged, so that it can be presumed that in most, if not all, the fissure healed. Thus it is probably safe to say that healing occurred in 60 per cent. or more of cases. The important point, however, is that many cases do not heal in spite of repeated injections. One such may be quoted.

A male, aged 36, reported with a posterior fissure on May 19th, 1932, when 4 c.cm. of A.B.A. were injected. He was seen at intervals, and on three other occasions the fissure was injected, the last injection being given in September. During most of this time the lesion was painless but it refused to heal and was later excised.

Anæsthetic solutions were introduced owing to the belief that spasm was the factor interfering with healing, but this view can hardly be accepted, for, if it were true, injection treatment would result in the healing of all cases. The oil and alcohol both act as irritants when injected into the tissues, and set up a reactionary fibrosis under the fissure which prevents its being overstretched at each act of defæcation. A hyperæmia is also brought about, and this favours the repair of the lesion by the encouragement of the growth of granulations which are so characteristic of a fissure which is in process of healing as opposed to one which is not. The fibrosis resulting from injections produces a certain degree of narrowing of the anal canal. This is liable to be inconvenient and may give rise to symptoms. In some cases the tissues at the site of the healed fissure remain rather weak and liable to break down again under strain, and pain on defæcation may persist, though the fissure has healed.

One patient, for example, received 3½ c.cm. of A.B.A. and the fissure healed. Four months later she still had pain after the bowels moved, and examination showed the fissure still healed but the anal canal was narrowed. She was admitted for operation, and when the anus was manually dilated, a split appeared at the site of the fissure.

That the healing is unsatisfactory in a percentage of cases is also shown by the fact that some tenderness may persist, although the fissure has become epithelialised. The conclusion arrived at is that though the injection treatment of fissure may be useful in selected cases, it is not an ideal method of treatment.

Details of technique.—The essential result to be aimed at in treatment is a widening of the anal canal at the level of the fissure, and this is most easily attained by division through its base of all fibrous tissue at that point. This involves section of the anal intermuscular septal ring. The procedure is simple and can be carried out single-handed in the consulting-room or out-patient department. The fissure is presumed to be in the usual posterior position.

The patient lies on his left side with the knees drawn up and a local anæsthetic is injected through a puncture 1 in. behind the anus into the tissues beneath the fissure, care being taken that complete analgesia is obtained. The anoscope shown in Fig. 3 is then gently introduced with the handle pointing backwards. This instrument * is a modification of Lockhart-Mummery's, the window being wider and the handle reversed. The lesion is put on the stretch in the window of the anoscope, and with the handle held in the left hand, the right is free to divide the fissure. The division is carried out with a tenotome or narrow-bladed scalpel till no strands of fibrous tissue can be felt with the finger, and when it is completed the increase in diameter of the anus is striking. Bleeding from the wound can be controlled by touching the surface with the silver nitrate stick, and a little vaselined wool is applied before the anoscope is withdrawn. Where a sentinel pile is present, it is better snipped off before the fissure is treated, as it is apt to obscure the view.

FIG. 3.
The anoscope.

The post-operative reaction varies a good deal. The unimaginative type of patient carries on with his work the following day, while the highly strung individual may require the better part of a week before he can take up his duties. After the analgesia has worn off pain is apt to be troublesome for 12 to 48 hours and morphia may be required the first night. Percainal applied at frequent intervals is of benefit. The pain can be largely prevented by injecting a few c.cm. of anæsthetic oil round the wound, but I am not convinced that the increased fibrosis caused thereby is altogether desirable. When the pain has subsided some discomfort is felt on defæcation for a few days, but after that, though the wound may take several weeks to heal completely, the anal canal ceases to intrude on the patient's consciousness. During healing the daily application of carbolic acid ointment or some similar preparation is all that is required, and the injection treatment of concomitant hæmorrhoids can be undertaken without anything more than slight discomfort.

The healing process takes place more by the ingrowth of skin from the edges than by adhesion of the sides by granulation fibrosis, and permanent widening of the canal is an end-result. Patients will often say that defæcation which, apart from the pain of the fissure, has been a cause of trouble and discomfort for many years becomes an easily accomplished act.

Even if the fissure is one of the uncommon variety that is relatively painless it is probably wise to treat it, as any chronic ulcerative process is liable to undergo neoplastic change, and the common site of fissure-in-ano is significant in view of the statement of Ward and Smith,[8] that carcinoma of the anal canal "commonly arises . . . somewhere in the posterior half of the anal margin."

* I wish to express my indebtedness to Dr. W. Whitelaw for putting at my disposal his post-mortem material at Dudley-road Hospital.

REFERENCES

1. Milligan, E. T. C., and Morgan, C. N.: THE LANCET, 1934, ii., 1150.
2. Stroud, B. B.: Ann. of Surg., 1896, xxiv., 1.
3. Miles, W. E.: Surg., Gyn., and Obst., 1919, xxix., 497.
4. Abel, A. L.: THE LANCET, 1932, i., 714.
5. Hilton, J.: Rest and Pain, London, 1930, p. 297.
6. Gabriel, W. B.: Brit. Med. Jour., 1929, i., 1070.
7. Morgan, C. N.: Ibid., 1935, ii., 938.
8. Ward, W. R., and Smith, A. J. D.: Recent Advances in Radium, London, 1933, p. 225.

* This instrument was made for me by Messrs. Philip Harris and Co., Birmingham.

CLINICAL AND LABORATORY NOTES

PERMANENT STANDARDS FOR THE TURBIDOMETRIC ESTIMATION OF PROTEIN

BY E. J. KING, Ph.D. Toronto

READER IN PATHOLOGICAL CHEMISTRY IN THE UNIVERSITY OF LONDON AT BRITISH POSTGRADUATE MEDICAL SCHOOL; AND

G. A. D. HASLEWOOD, Ph.D. Lond.

ASSISTANT IN PATHOLOGICAL CHEMISTRY AT THE SCHOOL

THE determination of the amount of albumin in urine, C.S.F., and other body fluids is a matter of clinical, as well as laboratory interest. Of the several quantitative methods which have been proposed (Esbach,[1] Exton,[2] Van Slyke,[3] and others, the turbidometric procedure of Kingsbury and Clark [4] is probably the most convenient. This method can be applied to C.S.F. and other body fluids as well as to urine, and has been in use, with modifications in the apparatus required, in the laboratories of the British Postgraduate Medical School for some time. The procedure is very simple, and can be used with equal success by laboratory workers and general practitioners.

The principle of the method consists in comparing the turbidity in a set of permanent standards with that produced when a standard amount of sulphosalicylic acid is added to a measured amount of the albuminous fluid. The standards consist of a permanent suspension of formazin in gelatin. They have been standardised in this laboratory by reference to the turbidity produced with sulphosalicylic acid in a solution of crystalline horse-serum albumin, a diluted human serum whose protein content was established by Kjeldahl, and a solution of crystalline albumin isolated from the urine of an orthostatic albuminuric.

The Method.—Add 3 c.cm. of 3 per cent. sulphosalicylic acid to 1 c.cm. of urine, C.S.F., or other albuminous body fluid, in a small test tube, and compare the turbidity after 5 minutes with that in the standards. If the degree of turbidity is too great for comparison make a suitable dilution of the fluid with water, and repeat the test.

Preparation of the Standards.—The gelatin is clarified as follows: 65 grammes of pure gelatin are dissolved at about 90° C. in 500 c.cm. of water. The "white" of one egg, in approximately twice its volume of water, is vigorously stirred into the solution. The mixture is heated, with continual stirring, on a boiling water-bath for 1 hour. It is then filtered through a large coarse paper in a heated funnel. The clear slightly yellow filtrate is kept liquid at about 50° C. for the preparation of the standards described below.

The formazin is prepared as follows: 25 c.cm. of an aqueous solution (10 g. per 100 c.cm.) of hexamine (hexamethylene tetramine) are added to 25 c.cm. of a solution (1 g. per 100 c.cm. in water) of hydrazine sulphate. The mixture is stoppered, shaken, and left at room temperature for at least 15 hours. The resulting precipitate of formazin is carefully mixed by gentle shaking until it is evenly dispersed throughout the liquid.

14·5 c.cm. of the suspension are added to 100 c.cm. of gelatin together with 0·3 c.cm. of 40 per cent. formaldehyde to ensure permanent "setting." Such a gelatin suspension of formazin has been found to be equivalent to a concentration of serum albumin (precipitated with sulphosalicylic acid under the conditions described above) of 100 mg. per 100 c.cm. The gelatin suspension is now diluted with clarified gelatin (containing 0·3 c.cm. of 40 per cent. formaldehyde per 100 c.cm.) to give standards corresponding to other albumin concentrations. The following mixtures of gelatin and formazin-gelatin suspension are made in small tubes of uniform bore (7·5 by 1 cm.).

Tube.	C.cm. of gelatin.	C.cm. of gelatin-formazin.	Value in terms of albumin per 100 c.cm.
1	3·6	0·4	10
2	3·2	0·8	20
3	2·8	1·2	30
4	2·4	1·6	40
5	2·0	2·0	50
6	1·6	2·4	60
7	1·2	2·8	70
8	0·8	3·2	80
9	0·4	3·6	90
10	0	4·0	100

When cold, the tubes are stoppered with corks cut level with the top of the tube. The stoppered ends are then dipped in molten paraffin wax and allowed to cool. The standards may be checked against serum solutions standardised by nitrogen determinations. They should be mounted in a wooden rack painted black. Comparison is best made by viewing them against a strip of white cardboard with a transverse black line fastened to the rack.

Arrangements have now been made with Messrs. Gallenkamp and Co., London, to manufacture these standards. Sample sets have been checked against those prepared in this laboratory and against albumin solutions of known strength.

REFERENCES

1. Esbach: Compt. rend. Soc. de biol., 1874, i., 33.
2. Exton: Jour. Lab. Clin. Med., 1925, x., 9.
3. Hiller, McIntosh, and Van Slyke: Jour. Clin. Invest., 1927, iv., 235.
4. Kingsbury, Clark, Williams, and Post: Jour. Lab. Clin. Med., 1926, xi., 981.

FATAL POISONING BY SODIUM NITRITE

BY T. A. C. MCQUISTON, M.B. Belf.

RESIDENT MEDICAL OFFICER, MUNICIPAL HOSPITAL, LINTHORPE, MIDDLESBROUGH

As poisoning by sodium nitrite is rare, and as I have not been able to trace any record of fatal poisoning by it in this country, I have been prompted to contribute a few notes on three cases which recently came under my observation.

On the afternoon of Sunday, May 31st, 1936, I was called to see a family who had suddenly taken ill after the midday meal. The affected members were a man, aged 45, his wife, aged 43, and her daughter, aged 5. When I reached the house both the man and his wife were dead, and the child had been removed to hospital. I was told by neighbours who occupied adjacent rooms that the family had complained of abdominal pains immediately after the meal, that they had vomited, and their faces "went blue." External examination suggested that both adults had been dead about an hour (which would be within an hour after partaking of their meal). The lips were rather cyanosed; there were particles of cabbage and food about the mouth, but the buccal mucous membrane showed no signs of corrosion. The only vomited matter which was obtainable I was told was that of the child. When taken ill the mother had told her neighbour that another daughter, who was at Sunday school, was not to have her share of the meal which was being kept in the oven.

The child, I was informed, was moribund on arrival at hospital. She had a stomach lavage, and stimulants, but died about half an hour after admission.

I subsequently performed post-mortem examinations on all three victims. As might be expected from the sudden death the pathological changes were slight. The

œsophagus in each case was normal in appearance. There was brownish discoloration at the anterior aspect of the pyloric end of the stomachs of the woman and child. On opening the stomachs the mucosa was found to be œdematous and injected, as was also the lining of the duodenum and upper ileum. The brain, kidneys, and other organs were rather congested.

The following observations were subsequently made. The dinner consisted of meat, potatoes, cabbage, Yorkshire pudding, rhubarb tart and custard. A salt cellar on the table contained an upper layer of a salt of a faint yellow colour and a lower layer of white salt similar in appearance to prepared table salt. A basin was found containing about 4 oz. of salt similar in appearance to that of the upper layer in the salt cellar. The contents of the basin and the upper layer in the salt cellar were found to be sodium nitrite of commercial purity containing 98 per cent. of the pure salt. The composition of the lower layer in the salt cellar corresponded to that of prepared table salt containing 98·2 per cent. of sodium chloride.

The following amounts of nitrites as sodium nitrite were found in organs, &c., examined.

	Sodium nitrite.
Man's stomach	4·275 grammes
Woman's stomach	1·284 „
Child's stomach (washed out before death)	0·005 „
Child's vomit	1·047 „

The unconsumed portions of the foodstuffs forming the meal contained the following percentages of nitrites as sodium nitrite.

	Sodium nitrite.
Yorkshire pudding	4·50 per cent.
Potatoes	0·75 „
Cabbage	6·50 „
Joint of meat (outer layer)	0·15 „
„ (interior)	0·015 „
Rhubarb tart	Nil.
Custard	0·015 „

It was impossible to form a definite idea of the quantity of sodium nitrite taken by any of the three persons, since unfortunately neither the vomit of the man, nor of the woman, nor the contents of the child's stomach previous to washing out were obtainable for examination; but the quantity must have been appreciably in excess of the amounts subsequently recovered from the stomachs. No definite evidence could be obtained as to the origin of the sodium nitrite, but the man had access to the sodium nitrite plant of a factory at which he was employed.

My thanks are due to Mr. A. Scholes, of the Public Analysts' Laboratory, Middlesbrough, for the results of his chemical analysis of the various specimens submitted to him.

MEDICAL SOCIETIES

ROYAL SOCIETY OF MEDICINE

SECTION OF LARYNGOLOGY

A MEETING of this section took place on Nov. 6th, Mr. LIONEL COLLEDGE, the president, occupying the chair.

Tuberculosis of the Larynx Simulating Cancer

Dr. A. HAUTANT (Paris) submitted a contribution on unusual forms of tuberculosis of the larynx, and the manner in which they could simulate laryngeal cancer. He showed slides of cases of laryngeal epithelioma which were at first diagnosed as tuberculous disease of that part, but the biopsy showed them to be cancer. One case showed a unilateral lesion of the subglottic area, with the cords almost fixed, and an extension on to the surface of the anterior arytenoid. There were vegetations along the edge of the cord. Another slide showed a median subglottic cancer, with an expanding ventricle descending below the thyroid border. One case showed a pre-arytenoid lesion, with cord fixation, and X rays revealed fibrosis of the lungs. The biopsy left no doubt that it was epithelioma.

On the other hand, he showed slides of a case of tuberculous tumour of verrucose form on the ventricle, closely simulating in appearance carcinoma of the larynx. He urged that, whatever the appearance in the larynx and the apparent certainty of diagnosis, a careful pulmonary examination should always be made. Provocative X ray therapy was dangerous, and should be ventured on only with caution.

Dr. N. RH. BLEGVAD (Copenhagen) opening a discussion on the problem of

Early Laryngeal Tuberculosis

said it was not his purpose to enter into the differential diagnosis of tubercle of the larynx from cancer, syphilis, and lupus. Thirty years ago tuberculosis of the larynx was most widespread among men, but, as Sir StClair Thomson had pointed out, men and women were now affected about equally, probably because the modes of life of the two sexes were now more closely approximated. It was particularly important to make the diagnosis of laryngeal tuberculosis as early as possible, as the sooner the treatment was begun the greater were the chances of cure. In many text-books it was stated that people suffering from phthisis were especially susceptible to laryngeal tuberculosis, but Dr. Blegvad knew of no evidence in support of this, and it was contrary to his own experience. Most of the phthisical patients he had seen had told him they had never even been hoarse, and certainly they had not had acute laryngitis. In cases of laryngeal tubercle the disease at once manifested itself as such. Sir StClair Thomson had included among the symptoms which should give rise to suspicion of laryngeal tuberculosis, catarrh or congestion, limited to one part of the larynx, lasting for some time; thickness and congestion of one arytenoid or one ary-epiglottic fold; paresis of the muscles of abduction. There were six other changes which should arouse suspicion: (1) An isolated redness of one of the vocal cords. This, however, might mean cancer in an early stage, or a remnant of catarrh; but if it was seen in a phthisical patient it was safe to regard it as tuberculous. If the redness disappeared when silence and simple treatment were enjoined one could not tell whether it had been tuberculous or not. (2) Prolapse of the ventricle of Morgagni was an almost certain sign of laryngeal tubercle. This prolapse might be the only evident affection of the larynx. It was accompanied by redness and swelling along the border of the vocal cords. This prolapse largely disappeared on phonation. Often tubercle bacilli were recoverable from the ventricle of Morgagni. Further suspicious signs were (3) a swelling and redness of the posterior ends of the vocal cords, (4) swelling of the lower ends of the vocal cords, and (5) infiltration of the interarytenoid region. The last suspicious sign to which he drew attention was one he had only noted in the past year—namely, (6) the appearance of a little red cushion below the commissure on the anterior wall of the trachea. In these early examinations of the patient it was important, but often difficult, to induce the patient to breathe quite calmly. For the examina-

tion of the inter-arytenoid region he strongly advocated the use of the posterior wall mirror of ter Kuile, a specimen of which he exhibited.

Dr. Blegvad's experience had been derived from two large Copenhagen institutions, one of them a sanatorium. Between 1916 and 1934, 1773 patients with typical laryngeal tuberculosis had been treated in the hospital; 404 of them could not be afterwards traced. Of the remaining 1369, 399 (or 29·1 per cent.) were clinically cured, 139 (10·2 per cent.) were improved, and 831 (60·7 per cent.) had remained clinically unchanged. In a large proportion of the patients who came in with hæmoptysis, fearing tuberculosis, the blood was found to be coming from the nose; in such cases there was usually no blood in the trachea. Why some people got the disease and others did not was, he thought, largely a question of personal immunity. He personally had been sitting in front of and examining tuberculous patients for twenty years, seeing quite 40 a day, but had never had a trace of tubercle. At his hospital it was a rule not to engage nurses who were Pirquet-negative. He believed in both a local and a general immunity. In only 17 of 921 patients with cured tuberculosis had the tubercle bacillus not been found—i.e., there were 98 per cent. of positives. The general treatment carried out in his institutions had been universal light baths. Of 179 patients so treated, 66 were cured. This treatment in many cases was supplemented by such measures as diathermy and local surgery.

Dr. L. S. T. BURRELL dealt with laryngeal tuberculosis in its relation to disease in the lungs, as he met with it in his work as a physician. Of the consumptives who because of hoarseness or laryngeal difficulty were sent to have a laryngeal examination, one-third were returned as not tuberculous. Those always did well, and following them up he did not find a greater incidence of tuberculous laryngitis in those who had this preliminary hoarseness than among others. When he first joined the staff at Brompton tuberculous laryngitis was looked upon with extreme gravity; it was still a grave disease, but a slight degree of laryngitis was not regarded as affecting prognosis. Recently he had been impressed by seeing patients with extensive laryngitis who made a complete recovery. A tuberculous larynx responded very well to artificial pneumothorax, and would also respond to other collapse methods, such as thoracoplasty. When it was possible to perform a complete collapse of the lung it was exceptional for tuberculous laryngitis to continue. If a larynx became definitely worse in spite of medical treatment of the chest, the outlook was practically hopeless; but if the laryngitis improved there was a very good chance that the patient would recover. It was his experience that nearly always blood which was coughed up came from the lungs, not from the throat. In his view smoking was most injurious to the patient with early laryngitis. In pulmonary cases, sputum was passing over the larynx in large quantities, yet many patients, even with advanced phthisis and others with tuberculous enteritis, escaped tuberculous laryngitis. He wondered whether some patients caused injury to the larynx by coughing and other strain and so made easy its infection.

Sir STCLAIR THOMSON questioned whether the title of the discussion meant the early appearance of tubercle in the larynx, or early manifestations of laryngeal tubercle in cases of phthisis. It was certainly a problem why it was generally impossible to find the tubercle bacillus in the larynx, and why some cases of tuberculous laryngitis had never had tubercle bacilli in their sputum or indeed any sputum at all. Another problem concerned the lupoid and the clinically typical tuberculous lesion. Two larynxes might present almost identical appearances; but while in one the result would be almost certain death, the other disease was of the lupoid variety, a form which was of slow progress and was usually curable. The lupoid form, however, would change into the definitely tuberculous one if it was neglected. Treatment entailed prompt sanatorium routine, voice rest, and, in certain cases, local application of the galvanocautery. Equally important was the general treatment of the patient, with all the modern methods of collapse therapy. Sir StClair said he had published a comparative study, showing the greater proportion of cures after artificial pneumothorax, and he was engaged in studying this with other methods which were now employed surgically to bring the lung to rest. He agreed with Dr. Burrell that abstinence from tobacco was most important. Even in the patients who might recover while they continued to smoke, recovery was assisted by quite 25 per cent. by giving up smoking. Early diagnosis was sometimes easy, sometimes difficult. Much depended on the trained eye of the laryngologist; with a long practice in this department tuberculosis had almost vanished from general clinics at hospitals, and was relatively rarely met with in consulting-rooms. A single inspection did not always suffice; examination should be made in a well-darkened room. The condition of the larynx changed from day to day, this change depending much on coughing, pyrexia, and even fatigue. Not only should the movements of the cord be noted, but as complete a view as possible should be obtained; it was almost impossible to see a completely invaded inter-arytenoid region.

Mr. F. C. ORMEROD assumed that the discussion was concerned with a not very advanced disease of the larynx; perhaps it might be restricted to the first group of Aschoff's classification—i.e., that of infiltration, with or without œdema. He had examined the notes of all the cases of that type seen at Brompton Hospital during 1934, in particular reference to the condition of the lungs. There were 65 such cases, and the tuberculous lesion was on the cords in 41 (one cord in 20, both cords in 21), on ventricular bands in 9, arytenoid processes in 2, inter-arytenoid space in 9, epiglottis in 1, and internal tensor paresis in 3. Fifty of these 65 cases showed tubercle bacilli in the sputum; in 4 tubercle bacilli were absent, and in 11 there was no record of them. It was clear, therefore, that slight involvement of the larynx did not mean only a slight amount of disease in the chest. The progress of the laryngeal disease did tend, however, to run parallel with that of the chest disease. In occasional cases, on the contrary, a larynx was seen to improve although the patient was going steadily downhill. Of the 65 cases referred to, 12 had phthisis in both lungs, 53 had phthisis in one lung; 4 had cavities in both lungs, 28 had cavities in one lung; 9 had infected tonsils, 6 had nasal obstruction. In cases of early involvement of the larynx it was usual to find fairly advanced lung disease. In these tuberculous cases sinus disease was comparatively uncommon. In patients who were going generally downhill one could not expect to bring about any improvement in the laryngeal condition; but in patients doing well, the larynx improved too. The treatment of early laryngeal disease seemed to rest largely with the physician, but the patient must be on silence and have applications of the galvanocautery. Aschoff's classification was as follows: (1) infiltration,

with or without œdema; (2) ulceration; (3) perichondritis; (4) tumour formation (granulomatous and pachydermatous). Mr. Ormerod commented on the seriousness of inter-arytenoid infiltration. Of 9 cases in which this was present 4 died, 4 became worse, and the other was in statu quo.

Mr. J. D. McLAGGAN said that the first essential in the treatment of a tuberculous lesion in any part of the body was to put the part at rest. There would be no benefit until the cough had been controlled; therefore a start must be made by drying up the sputum, and controlling the cough, which was done by routine sanatorium treatment, reinforced by artificial pneumothorax, phrenic avulsion, and thoracoplasty. In most cases as the lung condition responded to treatment, so also did the laryngeal condition. Sometimes local treatment was fatiguing and distressing to the patient, and when that was so the physician must forbid it. Before cauterisation was undertaken in any case the physician must be consulted, and there must be absence of night-sweats and increase of temperature, and the general condition must have been stable for some weeks. If doubt existed there must be no cauterisation. The objects of local treatment were threefold: (1) to reduce the discomfort of the laryngeal lesion; (2) to attempt a cure; (3) to relieve pain. The silence enjoined must be complete, but not unless there was hope of the patient getting better. Cauterisation with the actual cautery he regarded as a very valuable aid; indolent ulcers responded well to this. He did not like the cautery if the laryngeal lesion was active.

Dr. W. JOBSON HORNE said that many years ago he published, in the *Journal of Laryngology*, a summary of the research he had carried out, when he had the run of the dead-house at a hospital and examined the larynx of every case which had died with tuberculosis of the lung and no clinical evidence of laryngeal damage. The larynx was carefully microscoped, and in several cases he found evidence of the disease in the inter-arytenoid region; he also found a definite myositis of the inter-arytenoid muscle. The earliest clinical evidence of laryngeal trouble—he might almost say of pulmonary trouble—was not hoarseness but weakness of voice. Histories carefully taken would often reveal that what the patient noticed first was not only dysphonia but at times aphonia. He often found tubercle bacilli in the ventricle of Morgagni post mortem when the larynx showed no evidence of disease. He agreed that hæmoptysis did not come from the larynx. Laryngeal tubercle did not occur until there was a cavity in the lung. In children one did not see laryngeal tuberculosis, unless ulceration extended into the base of the lung. If a case of laryngeal tuberculosis was treated in a sanatorium and the lungs put right, the larynx would take care of itself.

SECTION OF PSYCHIATRY

ON NOV. 10th Dr. T. A. ROSS delivered to this section his presidential address on

Medicine and Science

Dr. Ross referred to the widespread desire among the members of the medical profession, and not least among psychiatrists, that their work should be deemed to be scientific. It behoved them sometimes to pause and consider how far it was possible, or indeed desirable, for it to be scientific. In certain aspects of medicine science was urgently needed, but that did not necessarily apply to all aspects. Two things had to be considered; (1) what was meant by science, (2) what did doctors imagine themselves to be, what was their function, what were they aiming at.

WHAT IS SCIENCE?

Science was said to aim at the power of prevision based on quantitative knowledge. It provided formulæ summarising the maximum number of past phenomena in the simplest, most concise, and most frugal manner possible, enabling the sequence of future phenomena to be foretold with the maximum economy of thought. Accepting these "brave words, with which no one ought to want to quarrel," Dr. Ross proceeded to discuss whether this promise of a tool of immeasurable value, a servant beyond price, was really being fulfilled. The deification of science had begun in the middle of last century, when it was hoped that it was going to make this world at long last a place fit to live in. It had not done so, because certain other factors not amenable to scientific method had been forgotten or overlooked. It was necessary to recognise what belonged to the category of science. The observations on which scientific formulæ rest must be demonstrable to others. They must permit of discrimination to ascertain that no personal bias has entered in, and therefore there must be no appeal to authority as an argument whether a statement is true or false. The observations must lend themselves or give promise that they would lend themselves to quantitative results. Causes must not be multiplied except by necessity, and yet the formulations must be comprehensive enough to cover the phenomena. There must be constant reference from the formulations back to the observable phenomena to check the former; and there were other postulates. In order to show how far eminent scientists had followed these rules which they themselves laid down, Dr. Ross traced the history of one branch of science, astronomy, from Copernicus, through Kepler, Tycho Brahe, Galileo, and Newton, up to modern times, showing how the fathers of modern science broke one of their own important rules, because on the whole they felt more comfortable in the new view, because they liked it better than the old one, because it enabled them to get on more easily with their investigations. To him this seemed important. The value of a theory depended not on its perfection but only on whether it enabled workers to get on with their investigations. The question of it being quite true belonged indeed rather to philosophy than to science. The later history of science—e.g., of physics and biology—furnished many similar examples. It was doubtful whether at any time the rules had been or even should have been followed by the greatest scientists. Dr. Ross went on to examine the rules themselves to ascertain whether they were indeed good rules. One was that the methods of observation should be public, that is, repeatable by someone with similar training so that the results could be checked. This suggested at once the question whether psychological investigation conducted as it was, with the subject and investigator alone together, could be of value. This method, essential to psychoanalysis, was often attacked. A biased observer was said to be exercising suggestive influence over an enslaved subject, and of course got the results he wished. In most laboratories as well as in analytical consulting rooms, however, this was common practice. Pavlov's directions for the technique of observing dogs insisted on a privacy so complete that it must be the envy of every psychoanalyst. Publicity was ensured for both these kinds

of workers in exactly the same way. It was open to anyone to build a laboratory or to arrange a consulting-room exactly as described. Some who had done the latter and followed Freud's technique had differed from certain of his findings, but Dr. Ross did not think that any had doubted his basic views of displacement, condensation, repression, and a dynamic unconscious. An investigator like Bartlett, not specially interested in psycho-analysis—who also saw his subjects in private—had shown how all remembering was charged with accretions, which had nothing to do with the thing to be remembered, but had to do with the interests of the subject. At the time of remembering, Bartlett's subjects had no notion that they were doing anything but reproduce what they had been asked to remember, no inkling that they were introducing their own interests and prejudices. The picture Bartlett gave suggested that their unconscious was seething with ideas ready to escape into consciousness on the slightest provocation or on none, in season or out of season. And if this was so, it was possible to understand the tension caused by ideas which are not acceptable to consciousness, and therefore kept in a state of repression. It was difficult to understand how certain people could sit down day after day with patients and let them talk, and yet remain unconvinced that there is a repressed unconscious, and how anyone escaped observing it working in himself.

It had been said that this idea of an active unconscious arose from animistic longings on the part of those who believed in it. It gave them a continuum from an event or a perception to its recall, and that continuum was nothing more or less than a soul—the sin of animism. But every one of us had an inescapable feeling that the continuum exists. The fact of an unconscious mind, if it were a fact, explained nothing about it. It was accepted by some for exactly the same reason that the strange Copernican system was accepted by Kepler, the reason that it was found to be of use in daily work. Dr. Ross gave in detail an example from his practice, one of many examples of cases in which the theory of the unconscious had helped him in his work. Privacy was essential, since the fear of condemnation by the herd was one of the reasons for self-condemnation. If a member of the herd was found who listened quietly without criticism and condemned nothing, the weight of reason for self-condemnation was lessened; the reason for repression was lessened. It was only the psychotically depressed who wanted to condemn themselves, the neurotic wanted an excuse. Public observation could not be the method of psychology as it could be on astronomy or chemistry. The observations could not be demonstrated before a class; but they were public in the sense that anyone with a little practice could repeat them.

The defect of the rule about authoritarianism was that it was an impossible one, human nature being what it is. Quantitative results, again, were not possible in a psychology which was to be of therapeutic value. It might be possible to measure intelligence, but things of even more importance than intelligence, such as hate, greed, ambition, sense of humour, fear, and the like, could never be measured; such things could nevertheless be investigated objectively. Measurement was of course a good thing; but measurement was not the only method of being exact. For much of medicine logic and not measurement would suffice. It was not necessary to bother too much about the rules for scientific inquiry. They were quite good rules but one must have conceptions. If these covered most of the phenomena this was as much as could be expected. Dr. Ross, looking back on his own experience, said that when he was young he believed in a condition called nervous exhaustion. The Weir Mitchell system of treatment seemed to meet it, and he was able to help quite a number of people. Then as he went on the number of facts not covered by the theory seemed very many, and he went on working without a conception and helped very few people. Then Dejerine with his conception of current pre-occupations seemed to cover most of the phenomena and Dr. Ross was again able to be useful. Then there were many examples which his conceptions did not cover; the conception of repression into an unconscious covered more, and seemed not to clash with but to supplement Dejerine; and now he could work happily, as he could not when he had lost faith in Weir Mitchell, and not yet got anything else.

Some still thought it might have been better if there had been no psychological awakening; they advocated a neurological approach to psychiatry. It was difficult to have patience with the cry for a neurological approach when people who had never dared to tell their story for fear of condemnation or mockery were in great misery and could be helped. For them a knowledge of social and domestic conditions was more important than neurology, and here the general practitioner would be the person best fitted to understand, if he were not discouraged by being told that psychotherapy is beyond him. He knew far more than anyone else about the anxieties, jealousies, and hates which go on in every household, and he had learned how to approach people humanly. If doctors refused to use "unscientific" approaches there are plenty of the laity eager to take up the task. But the symptoms of neurosis were so like those of physically determined disease that the person who handles these patients ought to have had a medical training.

WHAT DOCTORS SHOULD BE

There remained the question what doctors were aiming at. Dr. Ross's view was that primarily their business was to take full care of the sick and to look after them very much as good nurses looked after children. The really good children's nurse, who was of course often the mother, was often the only person who helped children to develop courage, self-reliance, truthfulness, and all other desirable qualities; in fact she was the first psychotherapist whom the children came across. Nearly all patients had made some regression to childhood or had remained fixed in states of absence of self-confidence, manifest or latent. And this high-sounding name of psychotherapy meant merely that those practising it should continue the good work which the nurse started long before, or begin it if she had failed to do so. It was also right to aim at increasing knowledge, but this could seldom be done with anything like respect for scientific rules—e.g., controls. Science was certainly necessary in medicine, but the demand for absolute certainty before views were published would never lead anywhere. Conceptions must cover a large part of the phenomena to be studied if they were to be useful; they would not cover all. But it was essential for progress that conceptions, even if imperfect, should be framed. Knowledge was useless unless combined with wisdom. Dr. Ross urged the profession to show more wisdom before the world and to display not the differences but the large body of psychological knowledge about which all were agreed.

SECTIONS OF THERAPEUTICS AND PHARMACOLOGY AND UROLOGY

A COMBINED meeting of these two sections was held on Nov. 10th when Dr. D. C. HARE, president of the section of therapeutics and pharmacology, took the chair.

Dr. M. L. ROSENHEIM opened a discussion on

Urinary Antiseptics (including Sodium and Ammonium Mandelate)

He defined a urinary antiseptic as a drug given internally to render the urine bactericidal, in this way excluding drugs used for lavage and local application from the discussion. In no other branch of therapeutics, he said, had chemotherapy attracted so much attention, for urine was the ideal medium for laboratory experiment. Innumerable urinary antiseptics were in existence, each backed by some, though often slight, laboratory work and by much, often uncritical, clinical trial. The ideal antiseptic had not yet been found. Drugs had been given by the mouth in cases of urinary infection with three objects: to render the urine either (1) more alkaline, or (2) more acid, or (3) bactericidal apart from its reaction. Drugs which acted by altering the acidity could only be bactericidal if the urinary pH fell outside the limits pH 4·6–5·0 and 9·2–9·6. Between these values *B. coli* would grow satisfactorily in vitro. It was impossible to render a urine sufficiently alkaline to be bactericidal, and potassium citrate could not be regarded as a urinary antiseptic. Its undoubted value in acute febrile cases was not due to any bactericidal action. Provided a kidney was functioning properly it could excrete a urine of a pH as low as 4·7 and theoretically such a urine should be sterile. In practice it was now generally accepted that acidifying agents by themselves were unable to cure urinary infection. The only effective acidifying agents were ammonium salts. Mineral acids given by the mouth had long been regarded as ineffective; acid sodium phosphate had been convincingly shown to be of little value. Ammonium chloride, ammonium nitrate, and acid ammonium phosphate were the salts most commonly used.

The acclamation which greeted the introduction of the ketogenic diet indicated only too well the dissatisfaction felt with available urinary antiseptics. The diet produced excellent results, and it was soon found to act in virtue of some specific substance present in the urine of the patients; this substance was lævo β-hydroxybutyric acid. When given by the mouth this acid was completely oxidised unless the person was in a state of ketosis. In searching for another acid with similar action Dr. Rosenheim had tried eight nearly related acids. Several of these had active bactericidal powers but mandelic acid was the only effective one clinically. It was only active in acid urine. In carrying out treatment with mandelic acid the urine had to be acid with a pH of 5·3 or less, which was shown by its giving a pink colour with methyl-red. No uncomplicated case of urinary infection should be accepted as being a failure with the treatment unless the urine had reached this acidity. Ammonium mandelate now replaced the original dosage by sodium mandelate and ammonium chloride and the fluid intake of the patient was usually restricted to about two pints a day.

Both sodium and ammonium mandelate differed from the ideal in four main points. In the presence of renal failure, the acidifying salts had a cumulative effect, producing a considerable degree of acidosis; the treatment was therefore contra-indicated in the presence of a raised blood-urea. The treatment was only effective in acid urine. It had consequently no effect on organisms which split urea and thus kept the urine alkaline. In acute febrile cases, again, rather than use mandelic acid, he thought it better to reduce the temperature with alkalis first. Mandelic therapy demanded careful supervision. If some proprietary preparation were ordered to be taken four times a day and the patient not seen for a fortnight mandelic acid might fall into disrepute.

Mr. E. W. RICHES (London) recalled a meeting of the two sections to discuss the same subject seven years ago. The discussion had been admittedly disappointing because they then had no effective urinary antiseptic. The introduction of mandelic acid was a great advance. He grouped the cases of urinary infection met with in surgical practice into those requiring no operative treatment and into pre- and post-operative cases. Those of the first group, consisting mainly of cases of pyelitis and cystitis, were by common consent treated by mandelic acid in the chronic stages but considerable difference of opinion existed about the treatment of the acute cases. He had only had opportunity to try mandelic acid in a few fulminating cases, but so far he had not regretted doing so. He cited a case which had failed to respond to alkalis for a fortnight but had achieved a normal temperature in two days of mandelic acid therapy. He still preferred to start acute cases with alkalis. He had succeeded in sterilising the urine in a case of enlarged prostate before operation, but he did not think it desirable to attempt this in cases of stone, diverticulum, or new growth of the bladder or urethral stricture. The failure of mandelic acid to procure sterilisation of the upper urinary tract was often an indication of another lesion. Complete cure after an operation could often be expedited by mandelic acid, but where the bladder had been opened the infection was sometimes very resistant to treatment. He had tried proprietary preparations but now, in view of their high cost, used ammonium mandelate put up by the hospital dispensary. The presence of gross pus was a cause of failure in treatment. In those cases which failed to respond after two weeks' treatment a full urological investigation was necessary.

Mr. A. W. CUBITT (London) spoke of the numerical results obtained in a series of 51 cases. Summarising these results he said that pure *B. coli* infections without gross lesions were sterilised in 96 per cent. of the cases; pure *B. coli* infections even with an obstructive lesion gave surprisingly good results but were more prone to recur. Mandelic acid had a definite though less marked sterilising effect on organisms other than *B. coli*. Recurrences occurred mainly in the very chronic cases of *B. coli* infections without organic lesion and in cases which had or had had an obstructive lesion. He considered failure of sterilisation to be an indication for a thorough investigation.

Dr. W. W. PAYNE (London) described the results obtained at the Hospital for Sick Children, Great Ormond-street. The cases had ranged in age from six months to twelve years. He was only taking into account those patients who were definitely infected and not acutely febrile. His one criterion of success had been sterile urine; the possibility of subsequent relapse had not been included. Unless a certain acidity was attained the cases were not considered to have been satisfactorily treated. Three methods of treatment had been used: (1) ketogenic diet, which had its drawbacks (one child had even taken to eating paper); (2) hexamine had been given in doses of about 30 grains a day on an average; (3) mandelic

acid, sodium and ammonium mandelate. Two prescriptions had been in common use :—

Mistura ammonii mandelatis—
℞ Ammonium mandelate .. .. 26 grs.
Liquid extract of liquorice.. .. 5 minims
Elixir of gluside .. .. .. 1/5 ,,
Water to .. .. 1 drachm

Mistura acidi phosphatis—
℞ Ammonium phosphate .. .. 7½ grs.
Liquid extract of liquorice .. 5 minims
Acid syrup .. .. 15 ,,
Water to .. .. 1 drachm

From his experience, he had concluded that much better results might be obtained with hexamine if the pH of the urine were carefully watched, results not quite so good as those obtained with mandelic acid but sufficient to warrant the use of hexamine, especially when the cost of mandelic acid was borne in mind. The complications were never severe enough to stop treatment, but pyrexial attacks seemed to be more common during treatment by any of the methods. As other speakers had said, *B. proteus* infections were difficult to clear up, nevertheless he had had two successes, one with hexamine and one with the ketogenic diet; none with mandelic acid. The commonest causes of failure among the satisfactorily treated cases had been anatomical lesions, *B. proteus* infection and relapses, probably from reinfection. Most of those unsatisfactorily treated were under one year of age; some vomited their medicine, some maintained acid urines in spite of swallowing their dose. Some cases although unsatisfactorily treated from the chemical point of view had been cured; possibly some were spontaneous cures, others might have been due to the urine being acid only at some periods in the day but failing at others and so giving an unsatisfactory result when the urine was bulked for twenty-four hours.

Dr. A. G. SIGNY asked that only cases known to be infected should be included in figures of treatment results. One observation of an infected urine found to be sterile three days later did not constitute a cure. Children had to be looked after from the intestinal point of view or they rapidly reinfected themselves.

Dr. E. P. POULTON agreed with Dr. Payne that the results with acid urine where the pH was properly watched justified further trial of hexamine. He had tried ammonium chloride and salol.

Mr. CLIFFORD MORSON had had 41 apparent cures among 50 cases of primary colon bacilluria treated with mandelic acid, and 7 among 9 cases of pyelitis in pregnancy, the tenth case not enduring the treatment. He was satisfied that mandelic acid treatment would effect a cure in all cases of *B. coli* pyelonephritis in which no permanent damage had been done to the kidneys. When fibrotic changes occurred in the renal parenchyma, either as the result of long-continued inflammation or back pressure from obstruction in the ureter or urethra, there was no prospect of sterilisation of the urine with any drug in use to-day. Mandelic acid might do further harm in such cases.

Mr. A. DICKSON WRIGHT asked whether Dr. Rosenheim had come across deafness as a result of mandelic acid therapy.

Mr. BERNARD J. WARD said that for twenty-five years he had felt the lack of adequate treatment for urinary infections and so had naturally been sceptical when he heard of Dr. Rosenheim's results. He had since become enthusiastic.

Mr. J. EVERIDGE mentioned that intravenous injections of Cylotropin, composed of hexamine sodium salicylate and caffeine sodium salicylate, were valuable in treatment of acute infections of the upper urinary tract.

Dr. HARE asked how long should elapse between the last dose of mandelic acid and the final specimen of urine in order to be sure that sterilisation had been achieved.

Mr. OGIER WARD mentioned an obstinate case which had not cleared up with mandelic acid treatment.

Dr. ROSENHEIM, in reply, said that several patients had complained of buzzing and one of deafness; the symptoms had not been permanent. He usually allowed three days between the last dose and the taking of the specimen.

LONDON ASSOCIATION OF MEDICAL WOMEN'S FEDERATION

AT a meeting held on Oct. 27th Miss E. C. LEWIS, F.R.C.S., gave her presidential address on the treatment of

Minor Lesions of the Rectum

She had chosen these lesions as her subject, she said, because they sometimes present difficulties to the practitioner, not so much in diagnosis as in the selection of the type of treatment which is most likely to yield a good result in any particular case. She began with *hæmorrhoids*—not only the most common of the diseases of the rectum but often the primary cause of other disturbances. She indicated the three classical symptoms of uncomplicated piles—pain and bleeding on defæcation, and prolapse—and the usual division into external hæmorrhoids and internal ones of first, second, or third degree. Examination by inspection, digital palpation, and a proctoscope was required, and the possibility of a carcinoma should not be ignored. Treatment was prophylactic, palliative, or surgical. The patient with a tendency to hæmorrhoids should avoid constipation, straining at stool, and overmuch standing. Regular laxatives were not injurious, but salts should be avoided as they produce a watery motion with a rather explosive action followed by straining. Palliative treatment consisted of the use of very soft lavatory paper, alternate hot and cold sponging, ointments either stimulating or sedative, and one or other of the medicated pessaries such as Haesa, Anusol, or even plain glycerin. Of the two types of surgical treatment, injections and operations, the first should always be employed if possible, but was not applicable in much more than 50 per cent. of the cases. Symptoms of uncomplicated piles of the first and second degrees, if the cases were carefully chosen, would nearly always be notably relieved. The medium most generally used was a 5 per cent. solution of carbolic acid in almond oil plus 2 grains of menthol to the ounce. Miss Lewis discussed the method of injection which could be repeated every week for 6 weeks, with a shorter course 6 months later if required. If the patient was not relieved, and this is rare, she proceeded with caution to operation. It was necessary to guard against doing too much to this region for fear of overdoing the fibrous tissue formation. A fibrous stricture could develop very rapidly, and it was a contingency to be borne in mind. The cases for operative treatment included those of intero-external piles, those with a great deal of thickening, and those with fibrous tags or an indurated fissure which would not heal. The method recommended was transfixion and ligature. Miss Lewis's practice was to leave a ½ grain morphia suppository in the

rectum and run in some sterile vaseline; she did not put a tube into the rectum as the discomfort caused more than offset any advantage. The patient started hot baths the next day, and kept the bowels confined for at least four days, after which an aperient was given and a small warm olive oil enema. Before the patient went home a finger should be passed, and the anus gently dilated to prevent any risk of stricture formation. In piles complicated by inflammation, swelling, and prolapse, no surgical treatment should be undertaken until the inflammation had entirely subsided. The patient should be confined to bed and an attempt made, but not persisted in if unsuccessful, to reduce the piles, perhaps after an injection of Protocaine into the sphincter region. Hot sitzbaths might help, and hot fomentations or antiphlogistine should be applied locally. A thrombosed external pile could be incised after an injection of novocain, the clot turned out, and redundant skin excised. External piles could be removed under local anæsthesia.

For *fissure* palliative treatment with ointments and bathing rarely sufficed. To obtain relaxation of the spasmodic contraction of the sphincter which prevents the fissure from draining and renders it inaccessible, an injection of A.B.A. (Anæsthesin 3, benzyl alcohol 5, and ether 10 in 100 parts of olive oil) should be given in a large bore needle following a small novocain infiltration if wished. The A.B.A. injection was given ½ inch behind, at the sides and deep to the fissure. It should give relief from pain for about a week during which time the fissure was dressed daily and usually healed. If it did not heal at its base, or if there was a marked sentinel tag, it was best to excise the whole fissure, together with a strip of skin running outwards from it, and to allow the gap to heal up without suture. The anal sphincter should be well stretched at the same time, and the patient should remain in bed for ten to fourteen days.

Prolapse of the rectum associated with severe hæmorrhoids would disappear with them. The treatment of true simple prolapse depended on the condition of the sphincter. If this was divided the treatment was repair of the sphincter, probably combined with a plastic operation to create some support for the lower end of the rectum. Sundry operations had been devised for the cure of prolapse where the sphincter is intact. Miss Lewis gave an account of the injection methods of Gabriel and Swinford Edwards which she had used with benefit in a few cases. This treatment was a combination of intra- and perirectal injections carried out at one sitting. The treatment was not ambulatory; the patient remained in bed for about a fortnight. In the after-care the bowels were kept confined as after an operation for piles, but the patient should begin at once on a course of voluntary contractions of the anal and perirectal muscles, namely, twelve contractions t.d.s. In cases of prolapse in children, if training, mild aperients, and general tonic treatment did not suffice, a small operation could be performed, consisting of making linear stripes with a thermocautery in the mucosa above the anal canal, either 3 or 4, about ¼ inch wide. The object was to fix the mucosa to the underlying tissues by a scar. The child should be kept in bed for two or three weeks and not permitted to strain.

A *fistula*, although much less distressing to the patient than a fissure, was more difficult to treat. It was essential to lay open the whole of the track and to excise as much of the fibrous tissue as possible. If the track was a branching one this might entail quite an extensive operation as failure would result from leaving a portion of the track unopened; this was because of the indurated walls which would not fall together and allow the channel to close up. In the after-treatment it was of the first importance to keep the cavity open and allow it to granulate up from the bottom; otherwise the fistula would re-form. If the internal orifice was situated above the level of the sphincter the latter might have to be divided, but, even if there were multiple openings, this muscle must never be cut at more than one point if subsequent incontinence was to be avoided. In view of this danger it might even be wisest to perform a two-stage operation, exposing the sphincter at the first, but not actually dividing it until the second.

ASSOCIATION OF INDUSTRIAL MEDICAL OFFICERS

AT a quarterly meeting of this association held in the London School of Hygiene and Tropical Medicine on Oct. 30th under the chairmanship of Dr. N. HOWARD MUMMERY, papers were read by Dr. H. E. Collier on the education of medical practitioners for industry, and by Dr. G. P. Crowden on post-graduate training in the practice of preventive medicine in industry.

Dr. COLLIER discussed the present methods of teaching employed in the department of industrial hygiene and medicine of Birmingham University, and outlined his personal views regarding future developments. He spoke of the "functions" which medical practitioners had to perform in and for industry, and arising from that the kind of special medical education that, in his opinion, was required adequately to fit medical practitioners to perform such functions.

Dr. CROWDEN suggested that much of the training for the D.P.H. course held at the London School of Hygiene was of value to the industrial medical officer. He described how at present such training was carried out, and showed the importance of the industrial aspect of the school's work. In particular he discussed the subject of physiology as applied to hygiene and industry, mentioning the daily cycle of life—activity→fatigue→recovery—and showing how the various factors concerned in this cycle affected the health and working capacity of the industrial worker. These factors were (*a*) activity factor, mental and muscular; (*b*) environmental factor—e.g., temperature, humidity, atmospheric pressure, air movement, air change, radiation, noise, vibration, illumination, atmospheric pollution, dust; (*c*) time factor, duration of work spell, rate and rhythm; (*d*) individual factor—e.g., individual make-up and physique, nutrition, personal hygiene, economic circumstances, responsibilities, family, clothing, home environment.

Practical demonstrations were given as follows:—

Dr. Crowden: (1) The Control of Radiant Heat. Properties of metallic and non-metallic surfaces. The use of metallic faced materials for the protection of workers against intense radiant heat and against cold, and for building purposes, &c., in hot or cold climates. (2) Apparatus for the application of artificial respiration by tilting, hip slings for the transport of casualties on stretchers in mine galleys or difficult situations. (3) Apparatus for studying problems of muscular work. Dr. T. Bedford: Instrumental measurement of warmth and comfort conditions in factories. Mr. T. C. Angus: (1) The Lighting of Factories and Workshops. (2) Jet fan device for local ventilation. (3) Methods of dust estimation and dust control in certain dusty trades. Dr. Crowden: (1) The effect of noise on acuity of hearing. Ear stops for the protection of workers in noisy trades. (2) Charts and diagrams showing the effect of vibration on the worker.

REVIEWS AND NOTICES OF BOOKS

The Adrenals

By ARTHUR GROLLMAN, Ph.D., M.D., Associate Professor of Pharmacology and Experimental Therapeutics, Johns Hopkins University. London: Baillière, Tindall and Cox. 1936. Pp. 410. 22*s*. 6*d*.

THE presentation of a satisfactory survey from all aspects of any one of the endocrine glands has now become a formidable task. Prof. Grollman has devoted considerable time and labour to experimental research on various physiological problems connected with this subject, the separation and assay of cortical hormone and its administration in adrenal insufficiency. The chapters dealing with these aspects of the adrenals are very able and it is doubtless for these that the book will most be valued. The arrangement of the subject matter, however, is in places unsatisfactory and the text bears evidence of undue haste or inadequate revision. Thus morbid histology, under the title of "pathological changes in the microscopic appearance of the adrenals" is dismissed in a somewhat hazy sketch occupying little more than two pages (pp. 54–56); but later on we find (pp. 356–366) a chapter headed Other Pathological Abnormalities of the Adrenals (which chapter incidentally is quoted in the table of contents as Other Diseases of the Adrenals), and there are separate chapters dealing one with Addison's disease and the other with tumours of the adrenals. In retrospect the ground has been covered, but all sense of cohesion in this important side of the subject has been lost. The author uses the term "chromaphil" instead of "chromaffin" in connexion with the adrenal medulla; although the former term was introduced four years before the latter, its perpetuation is not desirable because of possible confusion with the terms "chromophil" and "chromophobe," which are widely used in describing the cells of the anterior lobe of the pituitary. An erroneous description of the naked-eye appearance of the medulla of the normal human gland is given on p. 23: in fresh specimens it is greyish-white and not "dark-brownish" as here stated.

A new conception, which will probably attract considerable attention and merits careful examination, is the distinction by Grollman of two types of cortical tissue. One is the cortex proper, as seen in the adult human gland, which produces the hormone cortin. Distinct from this, and not normally seen in the adult gland, is what Grollman calls the "androgenic tissue," represented by the fœtal cortex of man, which rapidly undergoes involution after birth, and also by the so-called X-zone in mice, which disappears in the female at the inception of pregnancy. It is suggested that it is this androgenic tissue, which is defined on p. xii. of the preface as "that portion of the adrenal which in certain pathological conditions gives rise to disorders of the reproductive system," is responsible for the hypertrophy of the adrenals in examples of Cushing's syndrome and also forms those cortical tumours that are associated with the syndrome. This conception has the merit of explaining why some cortical tumours appear to give rise to the syndrome whilst others fail to do so, and also separates the functions of the adult cortex proper from those of the reproductive organs. But it is not easy to see why the fœtal cortex should be supposed to consist of this hypothetical androgenic tissue and much work will be needed to set this theory on a firm basis. The magnificent bibliography of 704 references in this work will be widely appreciated.

Years of Endurance

By Surgeon Rear-Admiral JOHN R. MUIR, M.B., F.R.C.S., R.N. London: Philip Allan and Co., Ltd. 1936. Pp. 292. 12*s*. 6*d*.

HERE are the experiences of a fleet-surgeon on board H.M.S. *Tiger* during the first years of the Great War. The story, starting with mobilisation and the preparation of a temporary hospital on shore, moves in a crescendo of interest through the Scarborough raid, the Dogger, and Jutland to a truly breathless climax in the description of the work of the M.O. during a naval action. Even in a modern battleship the M.O.'s action station, "the lineal descendant of the old cockpit of Nelson's day," is only 25 ft. in diameter and divided into four compartments, each partly occupied by ammunition-hoists. "There are light, water, and air; but as all three are artificially supplied we may, at any moment, lose any, or all, of them." Casualties must not interfere with the ship's fighting efficiency and, with a ship's company of 1300, it is not difficult to imagine what a shambles may exist in a place of this size if casualties are heavy. The author describes how, whilst attempting what emergency surgery he could in these circumstances, the ship, struck by the tidal wave caused by the sinking of H.M.S. *Queen Mary*, heeled over at such an angle that the patient began to slide off the operating-table. "Good-bye, Muir," was the calm observation of the paymaster-in-chief who was assisting at the operation. Slowly, however, the ship regained an even keel and the operation proceeded. Though occasionally bitter towards the Admiralty, the press, and the public, the author is loyal to his superiors, taking no sides in the Jellicoe-Beatty controversy which, he maintains, was begun by ill-informed persons outside the service. It is inspiring to read, in this splendid book, the adventures of a man who has been through the mill and who can write of them with so much skill and so little melodrama.

A Textbook of Gynæcology

Fourth edition. By JAMES YOUNG, D.S.O., M.D., F.R.C.S.E., F.C.O.G., Professor of Obstetrics and Gynæcology, University of London; Director of Obstetrical and Gynæcological Unit, British Postgraduate Medical School. London: A. and C. Black. 1936. Pp. 417. 16*s*.

ALTHOUGH but three years have elapsed since the publication of the third edition of this well-known book, a fourth edition has been necessitated by the advance in our knowledge of the physiology of menstruation and of its practical application. The opportunity has been taken to bring the work thoroughly up to date also in other respects. Prof. Young has succeeded, by means of a clear exposition and numerous illustrations, in placing before his readers a concise and interesting description of the somewhat involved hormonal control of the menstrual loss, in so far as it is understood to-day. In the section on treatment of the disorders of menstruation no strong advocacy of endocrine therapy is put forward. The author indicates the type of case that may be expected to benefit from such treatment,

and states the success or failure that has attended his own efforts.

An excellent section is that devoted to pain in gynæcology. Attention is directed to the fact that backache in women may well be caused by disorders other than those of the pelvic organs. In the past too much stress has been laid on this one cause, and the suggestion that 60 to 70 per cent. of all cases of backache are cured by treatment of the pelvic disease is almost certainly too optimistic. The causes, significance, and pathology of uterine displacements and prolapse are carefully explained. In regard to the treatment of prolapse, we believe that the author might press the claim for operative repair, as distinct from the pessary régime, rather more forcibly, and at the same time discard such procedures as vaginal hysterectomy and the interposition operation as methods for the cure of prolapse. The account of the pathology and treatment of new growths of the organs of generation is clear and concise; we note the mention in this volume of such rare neoplasms as the Brenner tumour, the arrhenoblastoma, and the diogerminoma.

One defect this excellent text-book shares with most other recent publications on gynæcology is the almost complete neglect of the psychological aspect of the subject, which is more and more coming to be recognised as an important one. We look forward to the time when students will be trained to appreciate the emotional significance attached not only to childbirth but to its anticipation and its aftermath, and when a sound text-book on gynæcology will be permeated by this outlook. Admittedly at present what the student wants is a sound and reliable description of lesions and symptoms, their recognition, and their treatment and that is here provided in concise terms.

The American Medical Profession 1783 to 1850

By HENRY BURNELL SHAFER, Ph.D. New York: Columbia University Press; London: P. S. King and Son, Ltd. 1936. Pp. 271. 14*s*. 7*d*.

THIS book is virtually a history of American medicine during the transition period from medieval magic to modern scientific method. The formal study of medicine began in the College of Philadelphia where, in 1765, the Pennsylvania Medical School was organised as a branch of the College by Drs. William Shippen, jun., and John Morgan. Morgan's proposed curriculum, which was not adopted till 1849, was "to begin with anatomy; then what I have called medical natural History, viz., The Materia Medica and Botany; Chymistry should follow; the Institutes come next; and the Study of Practice should compleat the work." Prior to 1800, the apprentice system of medical education was the rule and there were only four medical schools. During the next 50 years, though many new schools came into being, much of the teaching was still haphazard, traditional, and based on superstition. In the early part of the nineteenth century the general treatment of fever consisted first in depletion by blood-letting, purgation, sweating, diuresis, and emetics. If the patient survived he was subsequently "rebuilt" by "tonics," the chief of which was mercury. Sympathy goes out to the unhappy patient who, in 1843, was dosed with 60 grains of calomel. No wonder he "compared his sensations to one packed full of beans." Another patient, one W. G., was "rebuilt" with mercury; he "took sixty-four grains by the mouth, 2040 by clyster, and thirty-six hundred grains of triturated mercury were carefully rubbed into his arms and thighs in five days, amounting in the whole to 5704 grains, and the cure was astonishingly rapid." Astonishingly is the word. With so exhaustive a bibliography and index, it may be questioned whether so many footnotes were necessary; they doubtless serve the cause of accuracy but distract from the smoothness of the narrative. Nevertheless the book is extremely interesting and compact with information. To the medical historian it will be a valuable work of reference.

Quarterly Journal of Medicine

IN the October issue (Vol. V., No. 20) Ronald V. Christie and C. A. McIntosh report on lung volume and respiratory exchange after pneumothorax. They have followed over a period of two months the changes in total capacity, functional residual air, and residual air in two cases of pulmonary tuberculosis undergoing artificial pneumothorax treatment. On an average, they find, only about 30 per cent. of the air introduced is accommodated by collapse of the lung, the rest being probably spent in enlargement of the thoracic cage. They found evidence of expansion of the contralateral lung and discuss its significance in relation to emphysema. They confirm the absence of any direct correlation between the diminution in vital capacity, the amount of collapse, and the absence of any significant impairment of hæmorespiratory exchange after therapeutic pneumothorax.

Eldon M. Boyd and W. Ford Connell have studied the blood lipids in thyroid disease in order to discover whether there is any thyroid control over the concentration of plasma and red blood-cell lipid values, and whether any of the lipids would serve better than cholesterol as a laboratory guide of the effect of treatment. They used oxidative micromethods in fifteen cases under treatment, and found that in hyperthyroidism plasma lipoids are all decreased by about a third, but that there was no consistent increase in hypothyroidism. As thyroid function increased plasma lipids decreased in the relative order: neutral fat > cholesterol esters > free cholesterol > phospholipid; the reverse took place with decreased thyroid function.

A. Brian Taylor and A. G. W. Whitfield analyse 81 cases of subarachnoid hæmorrhage occurring as medical emergencies in two general hospitals in Birmingham over a period of 11 years. They suggest that the cautious use of lumbar puncture is of the utmost therapeutic value, with the partial replacement of the cerebro-spinal fluid by air as a helpful adjunct.

A posthumous paper by Sir Archibald Garrod describes the further progress of three cases of congenital porphyrinuria reported in the same journal in 1926. The present condition of each case is given in detail and this is followed by a commentary on the special features of this rare disease.—Henry Moore, W. R. O'Farrell, J. A. Geraghty, J. Murray Hayden, and M. A. Moriarty give a detailed account of ten cases of idopathic steatorrhœa (Gee-Thaysen disease), the youngest patient being 19 and the oldest 63.—Th. F. Bloem, J. Groen, and C. Postma relate five cases of Gaucher's disease in which certain clinical manifestations were present which have not been adequately mentioned before—namely, symmetrical pigmentation of leaden hue on the legs, malar flush, myopia, definite evidence of hereditary transmission, and certain chemical data about the lipoids of the blood-serum.

The proceedings of the Association of Physicians of Great Britain and Ireland at their thirtieth annual general meeting are briefly reported, and an account is given of the early history of the Association and of the journal.

RAMSBOTTOM COTTAGE HOSPITAL.—Lieut.-Colonel A. T. Porritt, a former high sheriff of Lancashire, and Mrs. Porritt have given £7500 to cover the cost of a children's ward and an operating theatre at this hospital.

THE LANCET

LONDON: SATURDAY, NOVEMBER 14, 1936

RENAL ASTHENIA

"THE function of the kidneys," says the thirty-third edition of a standard handbook of physiology, "is to separate the urinary constituents from the blood." So much attention has been given to this excretory function of the kidney, and so much time has been spent on the elucidation of its mechanism, that another function of the kidneys is liable to be overlooked. The kidney does in fact perform work of a metabolic nature which is of the highest importance to the body. The manufacture of ammonia is the best known example of this function; exactly how it is performed is not yet clear, but it has long been understood by physiologists that in some manner the renal epithelium obtains ammonia either from urea or from amino-acids, and that this is passed into the blood stream in order to neutralise any excess of acid-radical that may be present. The control thus exercised by the kidney is of vital importance; it is one of the chief mechanisms by which the reaction of the blood is maintained almost constant, and it is the mechanism by which the plasma is spared from giving up valuable bases at times when the blood becomes impregnated with acids. It is further known that a phosphatase can be isolated from the kidney and it is possible that it is by means of this enzyme that the kidney carries out the function which has just been described.

In our present issue Prof. JIMENEZ-DIAZ of Madrid discusses the mechanism by which death is produced in Addison's disease. Until recently our knowledge of the outstanding phenomena of this condition was practically limited to what had been taught by Addison and his successors: the pigmentation, the progressive weakness, the attacks of vomiting and diarrhœa, the steady fall in blood pressure, and the destruction of the suprarenal glands found at autopsy. More recently attention has been drawn to the loss of sodium via the urine which occurs in this disease, with diminution of the sodium in the blood and a slight increase in the potassium. Typical findings were published earlier in the year by E. N. ALLOTT in our own columns.[1] MARINE and BAUMANN had shown that the life of adrenalectomised animals could be prolonged by administration of common salt, and LOEB had found this treatment applicable to human beings. Subsequent clinical observation has shown that salt is of the highest value in prolonging life although, during crises, cortical extract is usually essential. On the other hand neither of these measures can really be claimed to be more than palliative. No convincing explanation of this biochemical peculiarity has hitherto been put forward, but JIMENEZ-DIAZ now suggests that the sodium loss is, in reality, the direct result of the failure of the kidney to carry out its normal function of supplying ammonia to the blood. With the brilliant logic of the Latin mind he examines the various possible explanations; rejecting in turn dehydration and other current theories, he brings forward evidence to show that ammonia production becomes defective in all severe and terminal cases of Addison's disease, and he suggests that there is present a renal asthenia, closely comparable with the asthenia which affects the muscles and the alimentary canal in these cases, and closely related to the effect produced in an experimental animal by the administration of iodoacetic acid. He is careful not to exaggerate his claim, and to insist that further proof of his theory is required; but in his medical institute he has, with the aid of his fellow workers, been able to obtain evidence, partly by the aid of WARBURG'S methods and partly by animal experiments, which lend strong support to his hypothesis.

Expressed in a sentence the thesis of JIMENEZ-DIAZ is as follows. The kidney of the patient suffering from Addison's disease is, through lack of cortical hormone, rendered asthenic and incapable of producing ammonia; there is a constant call on the sodium of the blood which is excreted for the purpose of maintaining acid-base equilibrium; the extracellular sodium in turn becomes depleted and potassium is withdrawn from the living cells bringing about cellular destruction, an increase of endogenous nitrogen, and ultimately death. It is further suggested that this functional disturbance of the metabolic activity of the kidney finds its parallel in patients with severe and uncontrolled diabetes, and that in cases of terminal Bright's disease in which there is gross organic destruction of the kidneys its counterpart can be demonstrated as an effect of an organic lesion. The thesis would seem to be one worthy of the closest examination, for if this hypothesis proves to be correct it should have a wide bearing upon medical problems of the highest importance. Many of our readers will draw another conclusion from this thesis; they will find in it evidence of the technical yet imaginative research which has been pursued in recent years at the University of Madrid.

[1] THE LANCET, 1936, i., 1406.

A NEW BISMUTH PREPARATION

IN the history of antisyphilitic treatment the introduction of bismuth, as a result of SAZERAC and LEVADITI'S experiments fifteen years ago, has led to changes secondary in importance only to those that followed the introduction of salvarsan and its derivatives. The bismuth preparations have now taken a place high in the scale of therapeutic efficiency, largely replacing the mercurials and proving only less treponemicidal than the arsphenamines. Most of them can be given in large doses by the intramuscular route without toxic effect on the majority of patients; but there can be no doubt that many of those put before

the medical profession have been inadequately tested for therapeutic potency, while some have little or no curative value. In the case of the arsphenamines small differences in methods of synthesis may lead to extreme toxicity, and the careful tests regarded as essential include estimates of trypanocidal power that afford some guide to therapeutic potency. In this country all new preparations of the arsphenamine group are tested clinically under the auspices of the Therapeutic Trials Committee of the Medical Research Council before they are issued for general use. On the other hand, the practitioner has no means of estimating the value of the various bismuth preparations and must choose from a bewildering variety. It is now recognised that a high content of elemental bismuth is not a useful index of the potency of such products, and that various other factors, including rate of absorption and ability to penetrate, must be taken into consideration. TYTLER BURKE,[1] endeavouring to overcome such difficulties, has recommended an ingenious method of estimating the relative values of the various antisyphilitic remedies by which a chemotherapeutic index is obtained for each of them by dividing the maximum tolerated dose by the minimum curative dose in the experimental rabbit. In this way he has evolved an efficiency scale in which the bismuth preparations, and other accessory medicaments, are rated in proportion to arsphenamine, the drug of choice: the doses of all available drugs have their therapeutic unit values, which provide a reasonably accurate guide to their relative efficiency. But this scheme, which appears to provide a method of restoring order out of chaos, has not been generally adopted.

Of the various bismuth preparations the suspensions of the metal and of its insoluble salts have been most widely used. They are slowly absorbed and are believed to maintain a steady therapeutic attack that supplements the action of the rapidly absorbed and rapidly eliminated arsenicals. The water-soluble bismuth preparations are quickly absorbed and excreted in such quantity by the kidney that they are apt to cause nephritis. Intermediate in rate of absorption are the fat-soluble products which LEVADITI considers to be the most effective and which in BURKE'S efficiency scale are ranked above the others. It is, therefore, interesting to have THURMON'S [2] report on a new fat-soluble salt, bismuth ethyl camphorate, that has been carefully tested in his clinic during the past eighteen months. This preparation contains about 23·5 per cent. of elemental bismuth and its solution contains 40 mg. of the metal in the recommended dose of 1 c.cm.—a relatively low bismuth content. Experiments in rats showed the drug to compare favourably as regards toxicity with other fat-soluble preparations in general use, and it was applied to 230 out of a total of 1800 patients under active treatment for syphilis, providing ample opportunity for detailed comparison. In all, 2444 intramuscular injections of the drug were given. Of the 230 patients, 55 were in the primary and secondary stages of syphilis, 154 suffered from tertiary and late syphilis (including 71 without symptoms or signs, in whom the diagnosis was based on positive serum tests alone), and 21 were congenital syphilitics. The continuous alternating method of treatment was adopted and the patients with early syphilis received six weeks' intensive medication with arsphenamine followed by twelve weekly injections of bismuth ethyl camphorate, which constituted one course of treatment. This course was repeated at least twice. In cases of longer standing the treatment began with twelve weekly injections of the bismuth preparation and was usually followed by a course of arsphenamine injections, or, in the case of neurosyphilitics, by Tryparsamide. In a few patients who were intolerant of the arsenicals and of mercury, the bismuth was used alone for considerable periods—in one case for as long as twenty-nine weeks—and in others, with indications for more intensive therapy, heavier dosage was employed. Bismuth ethyl camphorate proved very efficacious in its action both on visible lesions and on serological tests. In the earlier manifestations of syphilis there were no clinical or serological relapses during the administration of this drug after the preliminary course of arsphenamine. In the later manifestations, where the bismuth was used first, the response to treatment was prompt and in some cases remarkable. Occasional "bugbear" cases, which had proved resistant to or intolerant of other forms of treatment, responded well to this preparation. THURMON claims that the effect of bismuth ethyl camphorate in producing serological changes is one of the strongest points in favour of its use, but both as regards local pain or discomfort and more general toxic effects it compared very favourably with the standard insoluble bismuth salt—bismuth salicylate, suspended in oil—which was in routine use on other patients in the clinic.

These findings are particularly interesting as introducing a valuable preparation and as setting a useful standard for the clinical trial and assessment of new antisyphilitic remedies.

[1] Burke, E. T.: Brit. Med. Jour., 1931, i., 306.
[2] Thurmon, F. M.: New Eng. Jour. Med., 1936, ccxv., 315.

THE CARDIAC ASPECT OF SURGICAL RISK

THE problems which arise when operation is required by a patient who suffers also from cardiovascular disease are never simple. Nor can they be satisfactorily solved by any formula or any opinion based merely on statistical and theoretical evidence. Each case must be faced on its own merits. There can be little help in the knowledge that a surgeon found that seventy-five patients, who underwent operation in similar circumstances to those now present, recovered, if the practitioner can see no reason to place a patient among the seventy-five rather than among the other unlucky twenty-five. Similarly the formulated guides for determining the operative risk of every patient according to an equation worked out regarding blood pressure—the formula and rule of BARACH and of MOOTS—cannot be relied on except

as giving a generalised probability. Even the excellent breath-holding test of myocardial efficiency is, according to KIRSCHNER,[1] not to be trusted. "These tests," he says, "give little or no indication as to the capacity of the heart to withstand operative procedures." The only safe guide is a complete judgment which embraces the mental and physical qualities of the patient as well as his definite organic troubles, and the prognosis for him if no operation is performed, as well as an estimate of the probable result, immediate and remote, of performing it.

Sometimes the problem is simplified by the extreme nature of one or other of the factors which enter into it. The surgical state, for example, which calls for operation may be such that it can be said with certainty, "This man will die shortly if he is not relieved." This certainty must then be weighed against the probability of the patient dying on the table from the combined effect of operation and anæsthetic. In holding the scales the anæsthetist's help should be called in on occasions of this kind, for not only will the immediate outcome rest largely on how well he does his part, but also, if the worst occurs, it is more than likely to be attributed to the anæsthetic. Yet so far as the anæsthetic is concerned it is remarkable how comparatively innocuous cardiovascular troubles are, and it is rarely indeed that the anæsthetist will seek to veto an operation which the surgeon wishes to perform on a patient suffering from heart disease. This is not because the effects of general anæsthetics on the heart can be disregarded. On the contrary, recent cardiographic investigations of the heart[2] show plainly that no less than 75 per cent. of subjects under anæsthesia show some type of arrhythmia; but the normal heart is more affected than the abnormal. Moreover, the subjects of cardiovascular affections stand the induction of anæsthesia particularly well, because impaired circulation is accompanied by muscular development below the normal, and these subjects are little liable to the excitement and spasm which constitute a prime danger in narcosis. But the comparative immunity from risk of these patients does not extend to those who have myocardial defect. Here is the real peril, for a heart may be, through its muscular degeneration, ill-fitted to withstand the extra strain of any operation, and yet may have given but little evidence beforehand of its imperfection. These are the patients whose true state will only be revealed by searching preliminary examination, both verbal and physical. Fortunately, modern improvements in anæsthetic practice have reduced the risks in this class of patient, for it was they who provided the principal source of fatalities under chloroform.

Whether to operate or not on the patient suffering from Graves's disease is often a difficult question. These subjects offer some of the worst risks which the surgeon is called on to undertake but, on the other hand, in few conditions is a successful operation so completely satisfying. Generally the patient is a woman who, if relieved, has still many years of happy life before her, and the disability from which she is rescued is most distressing. But there is one respect in which the thyrotoxic patient is peculiar. Generally, when assessing the risk of operation, the worse the heart the more chary will the surgeon be of interfering. Faced with a patient suffering from thyrotoxicosis the surgeon has to take a different view, for the operation is designed to relieve the heart condition itself, and it is often safer for a patient thus affected to face operation than avoid it. As has been written,[3] "It is commonly believed that when the heart is seriously affected an operation should be delayed. In general this view is unwise and unsafe; the affection of the heart is another reason for thyroidectomy." For these patients, also, modern anæsthetic technique has greatly improved the chance of safe operation; the risk is very different from what it was before premedication and non-toxic gases were at the surgeon's disposal.

Valvular disease of itself, if fully compensated, has long ceased to be regarded as adding much to the operative risk, except in the eyes of the general public to whom "heart disease" spells inevitable disaster at operation. Most irregularities of cardiac action and extrasystole are regarded with equanimity by surgeon and anæsthetist, although their presence should lead to careful examination, including electrocardiography. Generally the symptom of heart disease which is of most import from the surgical standpoint is shortness of breath. When this is present risk is always increased, and especially if the operation or anæsthetic involves any element of asphyxia. Advanced arterio-sclerosis is often associated with other physical qualities which render the subject an unfavourable one for operation. In the presence of these the surgeon will commonly recommend operation only when this is needed as a life-saving measure. How successful it may be even in highly unfavourable conditions of the patients' cardiovascular systems is well illustrated by three histories recently recorded.[4] It might almost equally well be said of cardiovascular conditions as it was of head injuries, that none is slight enough to be ignored nor serious enough to be despaired of. It is also clear that correct judgment of the risk of operating on a patient suffering from heart disease requires the collaboration of physician and surgeon. The latter can scarcely be expected to estimate the kind or duration of life which the patient's cardiac condition will allow him to lead if no operation is performed. Yet this consideration must obviously affect the decision, and, on the other hand, the physician is less well qualified than the surgeon to judge the immediate risks of operation. On this point in many instances the experienced anæsthetist should also be consulted, for what he will give and how he will give it may play the dominating part in ensuring the success of the operation and a smooth recovery from it.

[1] Kirschner, M.: Operative Surgery. Philadelphia: J. B. Lippincott. 1931.
[2] Jour. Amer. Med. Assoc., Feb. 8th, 1936, p. 434.
[3] Thomson, A. P.: Birmingham Med. Rev., September, 1936, p. 221.
[4] Proc. Staff Meetings Mayo Clinic, Sept. 30th, 1936.

ANNOTATIONS

LORD NUFFIELD'S BENEFACTION

SOME further details of the terms of Lord Nuffield's benefaction to the University of Oxford [1] are set out in the decree to be presented at the meeting of Congregation on Nov. 24th. The gift is to take the form of an annuity of £192,307 payable half yearly for six and a half years on conditions laid down in a deed of covenant and trust. There are to be ten trustees, including the regius professor of medicine, two persons appointed by the governors of the Radcliffe Infirmary, and one person appointed by the committee of the Wingfield-Morris Orthopædic Hospital. The committee responsible for preparing, and as need arises for modifying, a scheme for the development of the school of medicine, including the Nuffield School for Medical Research, is to be composed of the vice-chancellor, the regius professor of medicine (who is to receive the sum of £300 per annum as a special allowance in respect of his activities in the development of the scheme), the four Nuffield professors of clinical medicine, surgery, obstetrics and gynæcology, and anæsthetics (to be appointed "as soon as practicable," each at a salary of £2000 a year); three persons appointed by the board of the faculty of medicine, and persons appointed by the authorities of the Radcliffe Infirmary (2), and the Wingfield-Morris Hospital (1). The regulations suggested for the Nuffield professors include provisions to ensure their residence in Oxford for 40 weeks in the year, except that they may be granted such leave of absence for purposes of study as the committee may determine. They are not to engage in private practice but may under conditions approved by the committee receive fees from patients attended in the hospitals associated with the school. They shall retire at 60 unless the visitatorial board of the university grant an extension not exceeding five years.

TROPICAL TYPHUS

OF late years fevers of the typhus group have been recorded from most parts of the world. It is surprising therefore that few references—and none of them conclusive—are to be found regarding these diseases in West Africa, though their existence has been established in the north, south, and east of the continent. A note from the Sir Alfred Jones Research Laboratory by Dr. Gordon and Dr. Davey [2] fills the gap by recording three cases in Sierra Leone, all in Africans, in which the clinical and serological observations make the diagnosis certain.

It may be remarked, however, that "tropical typhus," though it has gained currency, is an undesirable designation. Both in India and Malaya it covers at least two distinct rickettsia infections, one, the "shop typhus" of Malaya, serologically identical with the historical exanthematic typhus, the other, serologically and in certain respects clinically distinct, the "scrub typhus" of Malaya and the tropical typhus described by Megaw in the Kumaon Hills of India. Tropical typhus, in fact, means simply rickettsia infection in man in the tropics, and certainly includes two and probably more diseases, each differing in the animal species forming its natural reservoir and in the insect vector responsible for its transmission to man. A primary indication for these differences is the varying serological response to the different types of *proteus* X. The serum of the sufferer from classical typhus (louse-transmitted and with man as possibly the sole reservoir) agglutinates to the highest titre the type X 19, while that of scrub typhus (mite-transmitted and with rodents probably the reservoir) hardly agglutinates X 19 but agglutinates strongly the type X K. The explanation of the undoubted association of different types of *proteus* X agglutination with different rickettsias is still obscure. Felix has always maintained that the connexion of *proteus* and rickettsia is direct, in spite of the inability of *proteus* bacteria to produce the disease. The suggestion is that each is a stage in the life-cycle of a micro-organismal entity. Certainly the increasing evidence that different types of *proteus* identify infections with different rickettsias serologically is difficult to interpret in any other way. It is of interest that, of the three cases in Gordon and Davey's report, one is serologically divergent from the other two, the serum of the former agglutinating best the type X 2, while the sera of the latter agglutinate best the type X 19. No doubt the authors of this preliminary report have in mind further investigation to account for the divergence. One of the first and most obvious steps would be to search for types of *proteus* specifically associated with the rickettsia infections occurring locally.

[1] THE LANCET, Oct. 17th, p. 953.

[2] Gordon, R. M., and Davey, T. H.: Ann. Trop. Med. and Parasit., 1936, xxx., 203.

REGIONAL ILEITIS (CROHN'S DISEASE)

IN 1932 Crohn and his associates,[1] under the name of "regional ileitis, a pathologic and clinical entity," described 14 cases of a chronic inflammatory condition of the ileum causing diarrhœa, intestinal obstruction, and fistula. This and other observations on "Crohn's disease" were reviewed in our columns last February by Dr. R. F. Barbour and Dr. A. B. Stokes, and a fairly typical example was described in our issue of Oct. 24th by Dr. Herta Schwabacher. The condition is chiefly seen in young adults and occurs in at least four different clinical types: in the first there are symptoms of acute abdominal disease, indistinguishable from acute appendicitis; the second resembles other varieties of ulcerative enteritis, giving rise to diarrhœa, colicky abdominal pain, and slight fever; the third is the commonest, its main feature being intestinal obstruction; while the last is distinguished by persistent fistulæ between the abdominal wall and the gut, often following operation. The physical signs are characteristic, the most constant findings being a mass in the right iliac region, fistula formation, emaciation and anæmia, the scar of a previous appendicectomy, and evidence of intestinal obstruction. In addition Kantor [2] has described certain radiological signs, the most important of which are dilatation of the ileum above the lesion and a narrow string-like shadow of the opaque emulsion in the stenosed lumen of the affected gut. The pathological lesion is a non-specific granulomatous infiltration of the terminal ileum, associated with ulceration of the mucosa, stenosis of the lumen, and fistulæ; foreign body giant-cells are often found. The ætiology remains uncertain, but it seems likely that the ulceration of the ileum is secondary to granulomatous infiltration of its wall. Tuberculosis was carefully excluded by Crohn in all his cases, but he found no other cause. The relationship between Crohn's disease and so-called ileocæcal tuberculosis calls for immediate investigation, and the only satis-

[1] Crohn, B. B., Ginzburg, L., and Oppenheimer, G. D.: Jour. Amer. Med. Assoc., 1932, xcix., 1323.

[2] Kantor, J. L.: Ibid., 1934, ciii., 2016.

factory means of settling the problem is guinea-pig inoculation of material from every case operated upon, the histological picture being an uncertain criterion.

The treatment of Crohn's disease is generally admitted to be surgical. The three main possibilities are to short-circuit the lesion, to resect it, and to short-circuit it first and resect it later. Crohn originally advocated resection, but admitted that he had not had much experience of simple short-circuit in these cases. If a short-circuit was made he thought it should be combined with exclusion of the lesion. Mixter [3] also prefers resection but says the mortality is high and it may have to be done in more than one stage. Meyer and Rosi [4] suggest a practical compromise as follows: Since a short-circuiting operation is less risky than a resection, it may be that a two-stage resection for cases of regional ileitis is the best plan. If the symptoms disappear after the short-circuiting, no further surgery is required; but if they persist or grow progressively worse, resection is clearly necessary.

NITRITE POISONING

FATAL poisoning by nitrites is exceedingly rare, and for this reason it is useful to have Dr. McQuiston's observations on three cases at Middlesbrough (see p. 1153). The victims of this accident died from poisoning by sodium nitrite; not long ago a death from potassium nitrite was reported from Madras.[5] The experimental toxicology of the subject rests largely upon the studies made by Dossin.[6] It is noteworthy that the Middlesbrough cases "went blue." The cyanosis confirms the point made by Solis-Cohen and Githens [7] that the dangerously toxic action of the nitrites lies in their destruction of hæmoglobin. Their action upon plain muscle is the basis of their therapeutic value. Hence there is little danger from the use of these substances in treatment, because the formation of methæmoglobin from therapeutic doses is negligible.

INTERNAL DECOMPRESSION

ABOUT a fifth of all intracranial tumours are of the type of glioma known as spongioblastoma (glioblastoma) multiforme. It infiltrates the brain rapidly, is soft in consistency, and has a rich supply of thin-walled blood-vessels. Post mortem the cut surface of the tumour displays a great variety of colours, due to recent and old hæmorrhages and areas of necrosis. However drastic, surgery never eradicates such a neoplasm; in fact, the survival period is seldom longer than six months, though irradiation has sometimes seemed to give temporary benefit. It is not surprising that many neuro-surgeons feel justified in refusing operation where the pathological diagnosis of such a tumour can be made with reasonable certainty. In a proportion of cases, however, its nature can only be ascertained by histological examination of fragments obtained at craniotomy—an examination preferably performed while the surgeon waits. What is then the procedure of choice? If operation is concluded as soon as the diagnosis has been made the patient is likely to die in a day or so from hæmorrhage into the tumour or from cerebral œdema. To avoid this it has been customary to perform a wide decompression, with or without an extensive removal of the tumour. To this McKenzie of Toronto now suggests [1] an alternative which he aptly terms "internal decompression." A large mass of the tumour and overlying brain is removed so as to create a wide cavity, no attempt being made to reach the boundary of the tumour; after careful hæmostasis the dura is sewn up completely and the bone flap fixed tightly in place; and in this way any decompression, as commonly understood, is avoided. Results are satisfactory, inasmuch as the remaining short period of life can be spent usefully, with a minimum of physical disability, for symptoms and signs may at times retrogress remarkably. As the tumour grows, it fills up the space provided, without there being any disfiguring bulge from an external decompression. Moreover, it is stated that death, when it comes, is mercifully rapid; so that the patient escapes the lingering state of paralysis and semi-coma which too often follows a sub-temporal decompression.

THYROIDECTOMY AND THE HEART

WHEN total thyroidectomy is performed for angina pectoris, the relief of pain appears before there has been any appreciable fall in the basal metabolic rate. This early therapeutic effect has been attributed on the one hand to the severance of sympathetic nerves in the neck, and on the other to a reduced sensitiveness to, or diminished production of, adrenaline. Some clinical experiments bearing on this problem have been made by Bérard, Cutler, and Pijoan,[2] who observed the consequences of insulin injections in ten patients who had had total thyroidectomy for angina. In the normal person it was found that 25 units of insulin given intravenously caused an average maximum fall in blood-sugar of 50 mg. per 100 c.cm., and at the same time an elevation of blood pressure, averaging 30 mm. systolic and 12 mm. diastolic. In the patients subjected to thyroidectomy, on the other hand, a similar injection led to little or no rise in blood pressure, though the blood-sugar fell as it did in the normals. The transient hypertension provoked in normal subjects by artificial hypoglycæmia is interpreted as due to compensatory hypersecretion of adrenaline, whose object is to establish a normal blood-sugar level, while the failure of this hypertensive reaction after thyroidectomy suggests a deficiency of adrenaline action. The therapeutic results of the operation had been good in all but one of the ten patients investigated, and it was noted that in this one alone the insulin injection produced a distinct rise in arterial tension and also precipitated an anginal attack. Hypoglycæmia was induced by the same method in two other groups—patients with hypertension liable to hypertensive crises, and patients with Addison's disease. In the former the increase in tension was abnormally great, while in the latter it was negligible. These results are held to confirm the view that the suprarenal is essentially concerned in this reaction, and Bérard and his co-workers conclude that the value of thyroidectomy depends far more on an altered thyro-suprarenal mechanism than on a reduction in the metabolic rate.

To know more about the cardiac changes associated with severe myxœdema has become increasingly important since therapeutic hypothyroidism was introduced, and while it has been generally accepted

[3] Mixter, D. C.: Ann. of Surg., 1935, cii., 674.
[4] Meyer, K. A., and Rosi, P. A.: Surg., Gyn., and Obst., June, 1936, p. 977.
[5] Rajagopal Naidu, S., and Venkat Rao, P.: Brit. Med. Jour., 1936, i., 1300; see also Ann. Rep. for 1935 of Chem. Examiner to Govt. of Madras.
[6] Dossin, G.: Arch. internat. de pharmacodynam., 1911, xxi., 425.
[7] Solis-Cohen, S., and Githens, T. S.: Pharmacotherapeutics, New York, 1928, p. 1328.

[1] McKenzie, K. G.: Arch. Neurol. and Psychiat., 1936, xxxvi., 542.
[2] Bérard, M., Cutler, E. C., and Pijoan, M.: Presse Méd., August 15th, 1936, p. 1307.

that the heart enlarges in this disease—it may shrink under appropriate treatment—the pathology of the enlargement has remained obscure. By way of experiment Webster and Cooke [3] removed the thyroids of adult rabbits and examined them 5–7 months later when they had developed signs of myxœdema, confirmed by estimation of blood cholesterol. The hearts of these animals were found to weigh less than those of normal controls, but the fluid content of the heart muscle was greater (82 per cent. compared with 76 per cent for the controls). Microscopically, the myxœdematous heart muscle showed reduction in the number of fibres, œdema, and disappearance of the perinuclear sarcoplasm. While these results are interesting it cannot, however, be assumed that similar cardiac changes occur in the human subject with a diseased heart after removal of the thyroid. Therapeutic myxœdema is much milder than that of the experiments, and the relief of circulatory symptoms that is commonly experienced suggests that the myocardial change is probably towards normal rather than otherwise.

THE PUBLIC HEALTH ACT, 1936

THE Minister of Health has sent out a circular (No. 1576) to local authorities to encourage them to study the huge consolidating Act which was passed last July and which takes effect on Oct. 1st, 1937. He attempts no complete survey of its 347 sections which occupy some 200 pages of the statute book. So formidable a task was unnecessary since much of the new Act merely reproduces the old law. He draws attention, however, to certain sections which are new. The scope of building by-laws, for instance, has been enlarged. Existing by-laws of this nature will automatically cease to have effect after three years, and all future building by-laws will expire ten years after they are made. Another new provision is the power given to local authorities to make by-laws for control of swimming-baths and bathing pools under private management where members of the public are admitted on payment. For a complete list of all the new features a prolonged comparison of the recent Act with the sixty statutes which it replaces would be required. The ordinary student of public health will probably prefer to await the issue of the inevitable new text-books.

The wave of reforming zeal which produced the new code (and also the new consolidating Public Health (London) Act) is not yet spent. It is understood that the Ministry of Health will now produce yet another Act to replace the still unrepealed passages in the Public Health Act of 1875 which deal with such matters as unsound food, markets, and slaughter-houses. This is a laudable step; it is inappropriate that our national standards of health should be based on an Act which is more than sixty years old. Presently the indefatigable committee, which has already rewritten so much of the English law of local government and public health, will tackle the surviving laws about highways, largely based on legislation of 1837. Meanwhile the London County Council is said to be contemplating the early production of a code of local government on the lines of the Local Government Act of 1933, most of which was inapplicable to London. And the L.C.C. is also to produce an amending Public Health (London) Bill to bring London into line with the rest of England where the recent Public Health Act has advanced the national standard. No sooner, in fact, has London got its new code than it begins at once to tinker with it. The truth seems to be that some of our laws are nowadays so encrusted with overlapping statutes that it is impossible to see the way to amend them without first writing them out as an orderly whole.

[3] Webster, B., and Cooke, C.: Arch. Internal Med., August, 1936, p. 269.

SIR HENRY CURTIS-BENNETT

THE death of Sir Henry Curtis-Bennett has removed a figure almost as well known in medical circles as in the legal profession. Ever since the day when he took silk in 1919, and even before this, his name had been associated with important medico-legal cases, or criminal cases having a like bearing. He gradually succeeded to the great forensic practice of Marshall Hall, and in the last few years there has been practically no case of medico-legal importance with which he was not associated.

We owe the following tribute to "W. H. W." and "G. de B. T." who write: "As an advocate Sir Henry Curtis-Bennett could be suave in manner, stern or humorous in turn, and all without upsetting his witnesses or imperilling the issue for his clients. He figured in many famous medico-legal cases in the last twenty years, and always put his case fairly, even when placing his client's interests in a good light. He was perhaps at his best in motor-car cases, where the question arose of the defendant being under the influence of alcohol. His critical survey of the tests for drunkenness always aroused amusement, and even merriment in court, often to the advantage of his client, and he was a leading advocate in licensing cases. He was a great favourite as an after-dinner speaker and seemed to have an inexhaustible supply of good stories, many of them deliberately told against himself. He had for many years been one of the principal guests at the annual Buckston Browne banquet of the Harveian Society of London. The loss is great, his place difficult to fill, and he will be sadly missed, not only by his family and the members of the Bar but by scores of medical men who were fortunate enough to be numbered among his friends and acquaintances."

AND SOME WOULD EAT THAT WANT IT

ACQUISITION by purchase is a tortuous phrase for buying, and at a public meeting held in London by the Committee against Malnutrition on Nov. 5th it was suggested by the speakers that our system of distributing food to the nation is as inefficient as the phrase. Dr. Maitland Radford, medical officer of health for St. Pancras, said that to-day few of us were hunters, farmers, or fishers; we had to buy all our food and the importance of our system had therefore been increased. He appealed for an official scale of nutrition to be set up similar to the scale of overcrowding. Dr. T. O. Garland, medical officer for Carreras Ltd., maintained that the medical profession to-day knew how to improve the nation's dietary, but were not being allowed to use their knowledge to the best advantage. He gave the audience sound advice as to how to convert their ostrich-like friends to the fact that malnutrition does exist and that it is due to poverty. Mr. Harold Macmillan, M.P., who was in the chair, considered the abandonment of restrictions on production and the distribution of plenty as essentials. He supported Dr. Radford's suggestion of a nutrition scale and proposed further that a National Food Council should be set up, representative not only of producers, but also of consumers and scientific workers, to formulate a national food policy. At the beginning of the

meeting Dr. Edith Summerskill had introduced the nutrition films of the Gas Light and Coke Co. Mr. F. Le Gros Clark, secretary of the committee, also spoke briefly describing its work and appealing for support. He may be addressed at 19c, Eagle-street, W.C.1.

MEMORIAL TO SIR WALTER FLETCHER

A PORTRAIT-BUST of the late Sir Walter Morley Fletcher was unveiled on Wednesday afternoon at the National Institute for Medical Research, in the library of which the bust will be permanently placed. The bust is the work of Miss Dora Clarke and the subscribers to the memorial fund have secured from her a dignified likeness of the great organiser who was the first secretary of the Medical Research Council, a post which he held for nineteen years. The subscriptions to the fund amounted to over £2300 and, after the cost of the personal memorial has been met, the money will be used in the construction of the Walter Fletcher memorial laboratory, at the farm laboratories of the National Institute at Mill Hill where research work in nutrition will be carried on.

OBSERVATION OR EXPERIMENT?

IN the latest number of *The Fight against Disease* the Research Defence Society usefully republishes a large part of the evidence given by Lord Justice Fletcher Moulton before the Royal Commission on Vivisection in 1907. Few men were better qualified to judge the merits of scientific investigation or to analyse the value of research. To him the real issue was whether curative science should be observational or experimental. With observation progress was slow. Experiment brought rapid advance and free range. Experiment was like cross-examination; the specific question could be put to nature and she would answer. She does not care what the questioner meant to ask; she answers what he actually does ask. The Lord Justice took as a typical example the communicability of consumption. Observation must lingeringly watch the disease running through a family or prevalent in a particular place; heredity, climate, or soil may suggest predisposition and may multiply the causes of uncertainty. Experiment puts the actual question. Half a dozen guinea-pigs placed in the wards of a consumption hospital are found to be tuberculous; half a dozen other guinea-pigs placed in another hospital in the same conditions of temperature are found to be free. The instance may be over-simplified; it involves no cutting of animals, but its trial would presumably divide mankind on vivisectionist and anti-vivisectionist lines. For those who approach these problems on the humanitarian ground of rejecting all experiment on animals the Lord Justice had another instance. He asked them to imagine the case of a plague-stricken ship, with rats on board, arriving in port. One man, with a high sense of responsibility and with knowledge of the strong probability that rats convey plague, unhesitatingly extirpates the rats even though his method may mean their painful death by poisoning or asphyxiation. Another man cannot bear to see the rats harassed by the relentless pursuit; he lets as many as he can escape. The consequence may be to communicate plague not merely to a town but to a nation; the prospect is one of measureless misery. He has failed to weigh the inflicted pain against the mass of preventable pain. Lord Justice Fletcher Moulton continued with a further hypothesis. Suppose that the killing of the rats resulted not in the prevention of plague but in the discovery of the antiseptic treatment. The antiseptic treatment, we know, put an end to an amount of human suffering which can scarcely be calculated. Suppose the alternative was not "extirpate the rats or admit the plague" but "extirpate the rats or fail to discover the antiseptic treatment." The thoughtful man must answer "If I do not inflict this pain, I permit an unmeasured amount of pain which I could prevent." The duty is to follow the course which produces the minimum total pain; "whether it is inflicted pain or preventable pain which is not prevented," said the Lord Justice, "is in my opinion one and the same thing."

CARBOHYDRATE DYSPEPSIA

COLON flatulence is a common complaint and has several causes. Formation of some gas in the intestine is a normal process and such gas is a normal stimulus to peristalsis. Gas may arise from swallowed air passing down from the stomach, or from fermentative or putrefactive processes taking place in the intestine. In general fermentation leads to acid stools and the gas, being mainly carbon dioxide, is relatively odourless; putrefaction, on the other hand, produces alkaline stools and the gases are highly offensive. When an excess of fermentative gases is formed, the fault may lie in one or more directions, and these are the subject of an interesting paper by Dr. W. H. Owles.[1] The theory that an abnormal bacterial flora in the intestine is the primary cause, or that organisms normally found in the large intestine have abnormally spread upwards into the small, he regards as unlikely, and he prefers to attribute the gas to the fact that carbohydrate which should normally be broken down in the small intestine reaches the colon in a still fermentable state. In the normal stool partially digested starch granules can scarcely be discovered, and even in pancreatic disease, where pancreatic diastase is likely to be defective, it is rare to find excess of starch in the stool without also a considerable excess of neutral fat and partially digested protein (striated muscle-fibres). Dr. Owles concludes that carbohydrate dyspepsia is due to the abnormal fermentation of starch in the colon and is not primarily attributable to any diastatic enzyme deficiency in the pancreas or small intestine. He puts down the presence of fermentable carbohydrate in the colon to an undue hurry in the small intestine, through which its contents reach the bowel before starch digestion is complete. To support this contention he has analysed a number of cases in which

[1] Guy's Hosp. Rep., October, 1936, p. 411.

the passage of a barium meal through the small intestine was unduly rapid, and a further series in which an excess of starch was found in the fæces; of the latter 130 cases, 52 had radiological evidence of either "marked" or "less marked" hurry in the small intestine. Of 34 patients having an unduly fast passage of barium through the small intestine, all but two showed an excess of starch in the stools. Whether rapid small intestine movement is or is not constantly associated with carbohydrate fermentation, the cause of such intestinal hurry should of course be determined if possible. This may be none too easy, but among the possible causes Owles mentions the over-use of purgatives, gastro-enteritis, and nervous diarrhœa. Achlorhydria did not appear to be causally related.

The recognition of carbohydrate fermentation by the careful examination of the fæces should at least lead to symptomatic treatment in the form of restriction of starchy foods. It is not unlikely indeed that further knowledge will come from the clinical rather than the bacteriological side.

THE HÆMOPOIETIC SUBSTANCE IN LIVER

FRESH progress in the purification of the blood-forming principle of liver has lately been reported from England, Sweden, and America. Dr. H. D. Dakin (New York), Dr. C. C. Ungley (Newcastle-on-Tyne), and Dr. Randolph West (New York),[1] working in collaboration with Mr. F. H. Carr, D.Sc., of British Drug Houses, Ltd., have now isolated a highly purified product which they believe to be a peptide or closely related to a peptide, possessing many, though not all, of the properties of an albumose. Glucosamine, they now claim, is not an essential component of the active molecule, as was suggested in earlier work. They consider that the substance now isolated has a molecular size of 2·1 mμ and a molecular weight greater than 2000 and less than 5000. On hydrolysis the peptide yields arginine, leucine, glycine, proline, hydroxyproline, aspartic acid, and an acid resembling hydroxyglutamic acid. They failed to isolate a similarly active hæmopoietic principle from either kidney or brain, using the same chemical methods. This negative result is of no little interest since it is usually agreed that whole kidney, taken by mouth, is as active as liver, while brain has also some definite hæmopoietic action. It is possible that brain and kidney are sources of Castle's intrinsic factor; this remains to be tested. In this connexion it must be remembered that hog's stomach is effective when given by mouth, but no one has yet managed to prepare active extracts of stomach by methods applicable to liver extraction. It is possible, though perhaps unlikely, that liver and other organs contain more than one substance effective in Addisonian pernicious anæmia. Subbarow and Jacobson[2] claim that at least three chemically distinct fractions of liver are necessary for an optimum clinical response. They identify these as tyrosine, a complex purine, and a biuret-positive peptide. The two former are not present in the purest preparation made by Dakin and his colleagues. Laland and Klem[3] have described a preparation effective in even smaller amounts than that of Dakin; it is acid and bright yellow and contains sulphur, whereas that of Dakin is neutral and colourless and contains no sulphur. It is clear from these conflicting results that the chemical nature the of hæmopoietic factor is still obscure.

[1] Dakin, H. D., Ungley, C. C., and West, R.: Jour. Biol. Chem., October, 1936, p. 771.
[2] Subbarow, Y., and Jacobson, B. M.: Jour. Biol. Chem., 1936, cxiv. (Proc. cii.)
[3] Laland, P., and Klem, A.: Acta med. Scand., 1936, lxxxviii., 620.

THE next session of the General Medical Council will open at 2 P.M. on Tuesday, Nov. 24th, under the presidency of Sir Norman Walker.

THE honorary fellowship of the American College of Surgeons has been conferred upon Sir James Walton, surgeon to the London Hospital, and Dr. W. Fletcher Shaw, professor of clinical obstetrics and gynæcology at the University of Manchester.

WE regret to learn of the death on Monday last of Lieutenant-Colonel Robert Henry Elliot, the honorary consulting ophthalmic surgeon to the London Hospital for Tropical Diseases. He had retired from the Indian Medical Service in 1915 after holding for many years the chair of ophthalmic medicine at Madras and becoming well known for his work on snake-poisoning.

ON Thursday, Dec. 3rd, Mr. Hugh Lett will deliver the Bradshaw lecture to the Royal College of Surgeons of England, speaking on the early diagnosis and the treatment of renal tuberculosis. A week later Dr. George W. Corner, professor of anatomy in the University of Rochester, will deliver the Thomas Vicary lecture. His subject will be Salernitan surgery in the twelfth century. Both lectures will be given at the college at 5 P.M., and all members of the medical profession are invited to attend.

Dr. R. A. Young made his last ward round at the Middlesex Hospital on Friday afternoon, Nov. 6th, when he was accompanied by nearly 200 of the present and past students. After the round he met his colleagues, the house staff and the students in the board room, to take leave of them on his retirement from hospital duties, although not from the practice of his profession. Dr. H. F. Brice-Smith of Dorking made a presentation of a silver salver inscribed with the signatures of his house physicians since the war. Dr. Young has served the hospital and school for a period of 44 years, beginning as demonstrator of physiology in 1892. He was house physician in 1894, warden of the college from 1899–1904, assistant physician from 1902–1918, and physician from 1918 to the present time. He was also lecturer in physiology from 1896–1903, and pathologist from 1903–1905. Dr. Lakin now succeeds Dr. Young as senior physician to the hospital.

MENTION in the King's Speech of comprehensive measures to improve the physical condition of the nation has been followed, as our Parliamentary columns testify, by remarkable expression of opinion in both Houses. Sir Francis Acland expressed delight at the prominence given to a campaign for physical efficiency, but, he said, unless it was accompanied by something on big lines in the way of better nutrition, it would not get general support. Other speakers developed this antithesis in their own way. Mr. Griffiths remarked that before they gave the people dumb-bells the Government should see that they got sufficient food. Lord Horder began an impressive maiden speech by reminding the Lords that fitness for living, for working, or for fighting can never be obtained by physical measures, whether educational or recreational. And Lord Dawson, attacking the problem at an even earlier stage, pleaded for a comprehensive outlook, taking note of hereditary disabilities and of the necessity for a preventive attitude in planning a fit race.

PROGNOSIS

A Series of Signed Articles contributed by invitation

CXX.

THE PROGNOSIS OF HÆMOCHROMATOSIS

THE published records of cases of hæmochromatosis (bronzed diabetes) show that the commonest cause of death (50 per cent.) has been diabetic coma. Insulin should be able to prevent this, and has had time to show its effect in changing the outlook. However, the effect of insulin in prolonging life has, to my knowledge, not been emphasised in recent publications, and the authoritative book (Sheldon, J. H.: Hæmochromatosis, London, 1935) mentions prognosis and duration with insulin treatment hardly at all. The duration of life after diagnosis is still given at 18½ months. It is suggested by other writers that many cases are resistant to insulin and others are unduly liable to hypoglycæmia.

NOTE ON TWELVE CASES

I have now treated a sufficient number of patients to show that such a gloomy prognosis is not the invariable rule. The progress of 12 well-known cases is therefore recorded in the Table, which omits 2 untraced and 4 doubtful cases. No details of their symptoms or pathological lesions in life or death are given and only the duration and mode of life is shown. All these cases were sent to me as diabetics for appropriate treatment, but usually the condition of hæmochromatosis had not been diagnosed. In all, the four classical symptoms—diabetes, enlarged liver, pigmentation, and sexual hypoplasia—were present. They were all males, and 5 of the 12 are private patients and have been kept in excellent health by insulin without my ever putting them into a hospital or home.

Case No.	Age at diagnosis.	Year diabetes diagnosed.	Survival years since: Large liver observed.	Survival years since: Diabetes treated with insulin.	Insulin: units per day.	Mode of life.
ALIVE						
1	40	1924	13	12	44	Pensioner from Navy.
2	46	1927	9	9	60	Active professional life.
3	51	1931	9	7	28	Active business life and mild golf.
4	62	1933	23	7	56	Plays golf well; recently survived appendicitis with peritonitis.
5	49	1930	6	6	40	Full business life and riding.
6	52	1933	8	3	60	Business, golf and riding.
7	42	1934	2½	2½	70	Recent tuberculosis.
8	44	1935	1	1	80	Fragile; semi-invalid.
9	75	1936	1	1	30	Retired; vigorous; fit.
DEAD						
10	40	1936	6/12	6/12	60	Died: streptococcal septicæmia from throat.
11	50	1929	6	6	70	Died: cirrhosis, ascites and pyonephrosis.
12	62	1930	3	3	30	Died: heart failure; had ascites.

The number of these cases is too small to make any statistical generalisations on prognosis and duration of any value. Of the 12, 9 are alive and in reasonably good health. The longest survival, Case 1, seems in much the same condition as when first seen 13 years ago, and however much iron he has in his tissues and his very large liver, has always a mild anæmia. There are 6 who have survived more than 5 years since their severe diabetes has been treated with insulin. Some points will now be mentioned in more detail.

SPECIAL OBSERVATIONS

Insulin Treatment.—Some observers have stated that many bronzed diabetics are either resistant to insulin or very liable to hypoglycæmia. I have never found this so. Most require large doses of insulin (40–80 units a day in two doses) but this is no more than is necessary for severe diabetics of long standing. I have had no undue difficulty in balancing diet with insulin in hospital nor the patients in their home life. The diabetic element has never been so mild as to respond to diet alone and ketosis has been present before diabetic treatment in all but Case 9 (aged 75).

Liver Changes.—Most of these patients have had hard, large irregular livers, often sufficient to make them aware of an abdominal swelling. Three have felt certain that insulin increased the size of their livers, and I have personally confirmed this in two cases. Whether this is due to increase in liver size from stored glycogen and water is not known, but it seems a likely explanation. Tenderness of the liver, an infrequent symptom, has been more marked with its increased size.

Weight Changes.—Unlike most middle-aged diabetics after the beginning of insulin treatment there is no great and progressive gain in weight. They gain a few pounds with removal of dehydration but almost never regain normal nutrition and never become really fat whatever their diet or insulin. The one exception is my oldest patient, aged 75, who lost 42 lb. (20 kg.) in six months with the appearance of diabetic symptoms, but is rapidly becoming obese again on insulin treatment. He is the oldest case on record, but the diagnosis of hæmochromatosis is quite certain and is founded on the four typical symptoms and was originally made by Dr. Charles Newman, to whom I am indebted for handing over the case for treatment.

Onset of Diabetes.—However long standing the development of the disease may be, the onset of diabetic symptoms—polydipsia, polyuria, wasting, &c.—has usually been fairly sudden and produced an immediate change in the patient's health. In comparison to "ordinary" diabetes at this age, the diabetes has more quickly presented threatening symptoms and rapid and severe ketosis.

Normality of Life.—In 5 cases, an active and perfectly normal life has been followed for several years, including hard business or professional work with such added exercise as golf and riding. One (Case 4, aged 65) has recently survived acute appendicitis with peritonitis, and is now returning to his golf. Several others, I feel, are physically capable of such lives, but belonging to a lower social stratum and having been pensioned or retired, are never put on their mettle.

Causation and Alcohol.—Before I saw them, many of these patients had been diagnosed as alcoholic

cirrhosis of the liver, but all were at most moderate drinkers. Some have insisted on continuing with a moderate consumption of alcohol which shows no sign of changing their general or liver condition.

Prognosis.—No one could yet venture on a prognosis for any particular patient, but it is clear that death can be postponed and activity made normal for many years. As Sheldon suggests, it is likely that a liver death (cholæmia, cirrhosis, and ascites) will replace diabetic coma. As regards the liver, I feel that of all forms of cirrhosis—a hard, very large liver—this is probably the best. Here no violent toxic background is present to kill the liver cells, but a slow mechanical cause, the deposition of an iron excess. This gives the liver time to hypertrophy and regenerate enough new cells to maintain full liver function. This can go on adequately for many years, how long no one knows. But no immediately gloomy prognosis is justified if the insulin treatment is successful. I see no reason to tell these patients that they have a fatal disease and think it best, if necessary, to say that their diabetes is complicated by a large liver. The intelligent ones should never hear the words "bronzed diabetes" or "hæmochromatosis" when perusal of the older encyclopædias must be unnecessarily depressing.

SUMMARY

The mode and duration of life of 12 cases of hæmochromatosis under insulin treatment is recorded. It is shown that a life of normal activity may be maintained for several years by this treatment.

R. D. LAWRENCE, M.D., F.R.C.P.,
Assistant Physician to King's College Hospital, London.

POST-GRADUATE LECTURES

THE following summary of an address given by Mr. Morris at the London Hospital concludes our series of abstracts of post-graduate lectures delivered at the autumn courses of London teaching schools.

SURGICAL TREATMENT OF FACIAL PARALYSIS

(MR. W. M. MORRIS)

I HAVE chosen this subject in view of the progress that has been made recently in the United States as a result of the experimental work of the late Dr. A. B. Duel and Sir Charles Ballance, in New York, starting in 1926. The good results of the operation devised by them for the grafting of fresh nerve from another part of the body, or even from another person of the same blood group, to repair an injury of the facial nerve, are now generally acknowledged, and this work is being carried on in America, since Dr. Duel's death at Easter last, particularly by Dr. Thomas Tickle, of the Manhattan Ear, Eye, and Nose Hospital, with whom it was my good fortune to be associated this summer.

The commonest cause of facial paralysis is, of course, Bell's palsy, the next common cause being injury of the nerve during the operation of mastoidectomy. There are other, less common, causes, and so it is essential that we trace the course of the nerve-fibres from the cortex to their distribution to the muscles of the face, if we are to be able to localise, with any certainty, the position of a lesion causing facial paralysis. Surgically, this is of the greatest importance, as it is only those lesions which occur in the Fallopian aqueduct which can be treated by Duel's method.

Starting then from the cortex, the motor fibres run down to the VIIth nucleus, situated deep in the lower portion of the pons, and they emerge as the motor root at the lower border of the pons, between the olive and the restiform body. Just before the motor root leaves the pons, it is joined by fibres from the IIIrd nucleus, which supply the following muscles —orbicularis palpebrarum, corrugator supercilii, and the anterior belly of the occipitofrontalis. Lesions occurring, therefore, in the cortex or in the course of the fibres to the nucleus or a little beyond, will cause paralysis of the muscles of the face (with the exception of these three), deafness due to paralysis of the stapedius muscle, but no loss of taste in the anterior two-thirds of the tongue for bitter and sweet. Neither will there be dryness of the mouth as the fibres supplying vasodilator impulses to the submaxillary and sublingual glands are not involved. The electrical reactions will be normal.

The lesion may be traumatic, embolic, or due to new growth and usually entails paralysis of the VIth nerve and hemiplegia. Suppose now that the VIth nerve paralysis and the hemiplegia have recovered, or that the VIIth fibres were alone involved, it can be distinguished by the fact that the three muscles named escape, and the sensory root is not affected, so that taste and salivary secretion are not interfered with.

Proceeding further along the course of the motor root, the next point of importance is the internal auditory meatus. Up to this point the motor and sensory roots are separate.

Occasionally the nerve is injured in the removal of an acoustic tumour. Injury in this portion will give a complete facial paralysis and deafness, apart from deafness caused by the acoustic tumour, but it may not affect the sensory fibres supplying the tongue and soft palate. Conversely, the sensory root, which is closer to the VIIIth nerve than the motor root is, may be injured, and the motor root escape.

In the internal meatus—that is, up to the geniculate ganglion—injury is most commonly due to fracture of the base of the skull, and nerves VI., VII., and VIII. are usually involved.

The next important diagnostic site, from the surgical point of view, is from the geniculate ganglion to the stylomastoid foramen, which is the Fallopian aqueduct. The aqueduct is divided surgically into two parts, an upper part which runs from the geniculate ganglion to the lowest part of the horizontal canal of the labyrinth. This portion, about ½ in. long, has a very thin external bony covering, and is the commonest site of injury in the operation of mastoidectomy. In the course of this upper portion, the nerve to stapedius is given off, about ½ in. from the geniculate ganglion, and injury above this branch will produce deafness, below it will not. In the lower portion, between ½ and ¾ in. long, of the aqueduct, the nerve runs through dense bone, and it is in this portion only that Bell's palsy occurs.

And here it is essential to give a clear definition of what Bell's palsy is. It is due to inflammation of the nerve sheath or the nerve itself, due to toxæmia, or congestion due to changes of temperature, occurring in the second portion of the aqueduct, whereby nerve impulses are obstructed or totally inhibited.

The chorda tympani nerve is given off about ¼ in. before the stylomastoid foramen, and so a lesion in this part of the course of the VIIth nerve can be localised by testing the anterior two-thirds of the tongue, for bitter and sweet, acid and alkali. Lesions of the nerve after it leaves the stylomastoid foramen are usually traumatic, during operation or accident, or due to new growth of the parotid gland, and are easily distinguishable.

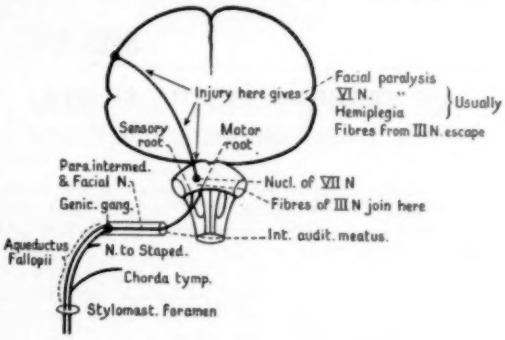
All the tests for deafness in localising the site of the lesion are straightforward in cases of Bell's palsy; but in injury during operation for mastoidectomy, there is always the deafness caused by the infection of the middle ear.

What we are considering to-day is the surgical treatment of facial paralysis. The old methods of anastomosing the distal portion of the nerve with the spinal accessory or hypoglossal have been discarded, except in injuries to the VIIth, during removal of acoustic tumours, &c., on account of the associated movements. Even in these cases there is the possibility of introducing a graft, but so far as my knowledge goes this has never yet been attempted. Surgical treatment is therefore, for the purposes of this lecture, confined to lesions occurring in the Fallopian aqueduct, and we will now consider the measures which can be taken to restore muscle function.

The most favourable cases are those of Bell's palsy. Here, owing to the inability of the nerve and its sheath to expand, as the result of inflammation or congestion, the nerve-fibres are constricted in this dense bony-walled canal and the nerve impulses cannot get through. Deprived of their blood-supply, the fibres die from the point of constriction onwards, but the nerve sheaths remain. If, therefore, the nerve is exposed, and the main outer sheath incised, circulation is restored, and eventually the nerve-fibres will again grow down their respective sheaths and function will be restored. Most cases of Bell's palsy, as you know, recover; some almost completely, others only partially. The difficulty is to know when and in which cases to advise operation for decompression. First, let me say that, if there is complete occlusion of the aqueduct, faradic response will be lost in 48–72 hours. If complete loss of faradic response is demonstrated it is advisable to continue the tests from time to time for, say, 3–4 weeks. If at the end of this time there is no response, the nerve should be exposed, the sheath incised, and the nerve decompressed. If faradic response is only partially lost, electrical massage and exercises of the facial muscles should be the treatment while there is definite improvement. When improvement ceases and there is no apparent progress, and there is still much disfigurement, epiphora, &c., decompression and even an inlaid graft should be advised. This need not interfere with the fibres which have already started to function.

In cases of injury at operation, where faradic response is completely lost, the sooner the nerve is exposed and the site and extent of the injury ascertained, the better. The appearance of the nerve in these cases is typical. If the nerve is exposed within a few days of the injury, there is the obvious section. If the case is seen some weeks or months after injury, the nerve shows a very definite neuroma above the site of injury, and just a thin fibrous-looking sheath (which is all it is) distally. This is the type of case in which a nerve graft is indicated.

The graft is conveniently taken from the anterior femoral cutaneous nerve. Two or three inches can be taken so that one can be assured that there is enough for the gap, some left over in case of accident, or even for use in another case. Evidence that the graft has "taken" will not be apparent for 6–14 months, judged by the movements of the facial muscles. But the surgeon may be encouraged earlier by the fact that the patient says the face feels different, there is a feeling of tightness or even of "pins and needles." He may lose his epiphora and the muscle response to galvanism becomes less sluggish.



These encouraging signs may begin to appear at about three months.

Informed opinion in this country appears to be that regeneration of nerve-cells cannot be expected after an interval of two years. I can only say that one of Dr. Tickle's cases, with a facial paralysis of twenty years' duration, a Bell's palsy, showed quite marked improvement after the graft operation. Another case of the same duration showed no improvement; but, as he says, it is obviously worth while to try, however long the paralysis. No harm will be done even if there is no improvement; but in the cases which do respond the benefit to the patient is almost inestimable—not to speak of the satisfaction of the surgeon.

Finally, it is hopeless to expect complete recovery in any but the earliest cases; so that, the sooner the operation for graft or decompression is carried out, the better the chance of recovery will be.

Patients can be taught, and readily learn, to use the unaffected side of the face only as much as the affected side will move, and a clever patient, with even only slight movement on the affected side, can disguise the fact that there is any paralysis at all, so that only in moments of extreme emotion can the disability be detected.

I am showing you two cases.

CASE 1.—Mrs. A had a complete mastoidectomy (right ear) performed by Hunter Tod fifteen years ago. She made an uninterrupted recovery and suffered only from deafness until April this year. She then complained of pain in the ear for three weeks, after which came the onset of complete facial paralysis on that side. Examination showed the presence of a large cholesteomatous mass, and the lesion was demonstrated to be in the dense bony portion of the aqueduct. The nerve was exposed, a portion about ½ in. excised, and a graft inserted. This was on May 15th. I wish you to notice now that the natural lines of expression at the angle of the mouth are beginning to make their reappearance; there is obvious movement of the orbicularis oris when she attempts to whistle, to show her teeth, or to smile, there is no epiphora, and there is slight faradic response in orbicularis oris and orbicularis palpebrarum. The mastoid incision is completely healed, and I can assure you that the cavity is completely epitheliialised. She responds to the tests for taste correctly two out of three times.

CASE 2.—Mr. B was admitted to the London Hospital in May, 1936, suffering from left lateral sinus thrombosis which was successfully dealt with. He had a history of twenty years' otorrhœa, and left facial paralysis for a month before admission. In August I explored the aqueduct and found a mastoid cell actually involving the aqueduct, and full of pus and granulations. Above this there was a very obvious neuroma, and below the typical fibrous-looking sheath. The sheath was incised from a point about ¼ in. below the cell right up over the neuroma to healthy nerve, and a graft was inserted. It is just over two months since this was done, so no very definite result can be expected yet, but the epiphora is obviously much better and he is beginning to feel that tightness in the face to which I referred before. In the meantime he is having faradic massage and does his exercises.

These are the first two cases on which I have adopted Duel's method, and I hope that those of you who have seen them to-day will be here again next year when I hope to demonstrate the progress they have made.

SPECIAL ARTICLES

THE TRAINING OF THE SENSES *

BY R. A. YOUNG, C.B.E., M.D., B.Sc., F.R.C.P.

ONE of the greatest lessons I learnt in the wards of the Middlesex Hospital as a clinical clerk and house physician was the importance of method and routine. These were strongly impressed on me by Sir R. Douglas Powell and Sir J. Kingston Fowler. If we did not record our physical signs in the classical order—inspection, palpation, percussion, and auscultation—we were reproved and asked in what way our order was an improvement on that established by tradition and experience. That is the chief point I want to stress this afternoon—viz., the importance of method in investigation and concentration in considering the diagnosis and treatment. Work out your cases methodically, concentrate on each problem, and don't carry the burden of one case into the next. Do your best and don't worry. Worry does no good to your patient, and it does harm to you, both to your peace of mind and to your efficiency.

In examining the patient, except in matters of emergency, work out a routine for yourself. Medicine is alas! not an exact science, but we can try to be accurate in our observations. Errors in diagnosis are more often due to lack of or error in observation than to lack of knowledge.

Train all your senses. Don't forget that your predecessors had to rely almost entirely on their own unaided observations, and that you may be placed some time where special tests and radiological assistance are unobtainable. While I was preparing my remarks on this matter, I chanced upon a lecture of my friend Prof. John Ryle,[1] which I can commend to your attention as both informative and amusing. This has always been a favourite subject, indeed almost a hobby, of mine, and I suspect of all physicians concerned in teaching.

A long lecture could be given on the *visual aspects of disease*. Think for example of the various characteristic facies, complexions, stances, gaits, tremors, and deformities. Conditions like myxœdema, Graves's disease, congenital heart disease, and parkinsonism can be recognised almost at a distance. A keen inspection of the chest and its movements may afford most valuable hints as to the side which is involved, and reveal fibroid contractions, compensatory displacements, and deformities. Always test the direction of the flow of blood in dilated veins coursing over the chest and abdomen. I can recall the experience of a candidate, whom I had coached for a medicine examination in my younger days, being congratulated by the examiner on being the only candidate who had carried out this simple procedure and thus determined whether the deep venous obstruction was in the abdomen or the thorax.

When taking a pulse I always look at the finger-ends for clubbing, which suggests careful search for pulmonary, cardiac, and hepatic abnormalities, and at the nails for transverse ridges as indicating an illness in the previous six months. The colour of the skin may give most helpful information, as in argyrism, Addison's disease, hæmochromatosis, pellagra, polycythæmia, and enterogenous cyanosis. Osler's nodes have on more than one occasion saved me from the embarrassing experience of confessing my inability to diagnose a case of long-continued pyrexia. On one occasion a boy who had returned from a holiday camp with severe pyrexia and generalised pains drew my attention to typical rheumatic nodules in his fingers and thus established his own diagnosis.

Drug rashes may also be revealing. I remember that on one of my rounds, a boy of about 18 was brought into my ward in a state of coma, accompanied by a very agitated dental surgeon. He had been given a local anæsthetic for an extraction and shortly afterwards became rigid and comatose. When I saw him he was cyanosed and unconscious, but his pulse though slow was of good volume and his breathing was slow and normal. Dr. C. E. Lakin, who was in my ward at the time, noticed an acneiform eruption on the face and the somewhat substandard development of the patient. He suggested that the rash might be a bromide acne, and the condition one of post-epileptic coma, which proved to be correct.

The *sense of touch* is one which we should all develop to the utmost. Palpation often gives more information in conditions of pleural disease than any other examination, by establishing the position of the cardiac impulse and the presence or absence of vocal fremitus. My present clinical clerks will recall the interesting fremitus we noticed in a case at present in the wards with a localised basal effusion, probably from endothelioma of the pleura. On tapping lightly over the base with the plessor finger and feeling below with the palm of the hand, we noticed a peculiar tremulous fremitus which reminded me of the "hydatid thrill." It was of great interest to find this sign described in THE LANCET by Dr. R. L. Pitfield [2] of Philadelphia a few days later as a common sign of fluid in serous cavities.

In percussion, the sense of resistance is often as informative as the note obtained. A routine palpation in the supraclavicular fossæ may reveal secondary enlargement of glands in obscure conditions in the thorax or abdomen, and a similar palpation of the skin elsewhere may reveal the swellings of Recklinghausen's disease, which is often missed in its early stages. Abdominal palpation is admittedly difficult, but with experience a high degree of accuracy in interpretation is often acquired. I have often

* Part of a farewell clinical lecture, entitled Odds & Ends, delivered at the Middlesex Hospital on Nov. 6th.

[1] The Natural History of Disease. By John A. Ryle. London, 1936, p. 24

[2] THE LANCET, Oct. 24th, 1936, p. 983.

admired the ability of my surgical colleagues in difficult problems of this kind. In this connexion I have a very pleasant recollection of three meetings with Chevalier Jackson during his visit to this country a few years ago. His extraordinary skill in developing the use of the bronchoscope is universally recognised. His account of his experiments in his leisure moments to devise special apparatus and to become expert in their use was enthralling, and a fine example of the art and craft of medicine and surgery.

The *sense of hearing* gives information in far more ways than in the use of the stethoscope. The stridor of laryngeal or tracheal obstruction as opposed to the long-drawn expiration with sibilant rhonchi in asthma and other forms of small tube bronchial obstruction, may be quoted as examples. The brassy cough of tracheal or main bronchial obstruction is unforgettable. I recall an afternoon when I went down after a ward round to the out-patient department to see a case sent up for my opinion. It was a middle-aged man with a history of cough and expectoration. There were very few signs except those of a markedly emphysematous chest and a few rhonchi. By good fortune, just as I was about to make a conventional diagnosis of winter cough and emphysema, he gave a typical harsh clanging cough. An X ray examination at once revealed a large aneurysm from which he died in hospital within a week. A similar cough nowadays makes us think more of a malignant disease of a bronchus or of other causes of mediastinal pressure, but aneurysm should always be considered. Many other varieties of cough could be instanced as typical and helpful in diagnosis, such as those of whooping-cough, of laryngeal disease, and of pleural irritation.

Many examples might be adduced of the information given by the *sense of smell*. I recall a typical case of renal rickets which was brought to me because of the urinous odour of the boy's breath. The smell of the bedclothes or of the patient's underwear may tell you of incontinence, which might not otherwise come to your notice. Sir William Osler noted the characteristic smell of some cases of typhoid fever and quoted Nathan Smith's description of it as a "semi-cadaverous musty" odour, which I regard as a masterpiece of description. The "odor phthisicus," though not common, is I think generally of evil omen. The smell of acetone in the breath and the peculiarly unpleasant smell in bad cases of pyorrhœa alveolaris are matters of common observation.

The *sense of taste* comes less into use than the others in our work. It is, however, worth while sometimes to taste the medicines ordered. In the past I have found that my attempts to inculcate this on my clerks has been more appreciated by the onlookers than by the object of the test.

It has been of great interest to me to watch the development and the increasing importance of special aids in diagnosis. It must be difficult for some of you to conceive of medicine without radiology or to think of diagnosis without the help of the clinical laboratory. Hæmatology, cytology, bacteriology, and biochemistry now give us priceless help in our work. Physiology is nowadays justifying its old name of the "Institutes of Medicine." In this development our own Prof. Samson Wright has played no inconspicuous part, as the popularity of his well-known text-book testifies. I yield to no one in my appreciation of the help I receive from all these special methods, and I appeal to them whenever it is possible. Remember, however, that in private practice it will be necessary for you to be eclectic, if only on grounds of economy. You may have to do without them altogether, so this should be a stimulus to you to observe as much as you possibly can without them and not to rely entirely upon them for your diagnosis. I like to make a tentative diagnosis on my own observations, and then to confirm, modify, or discard it by these special aids. In a difficult and prolonged case don't hesitate to reconsider your diagnosis, even when you are convinced you are correct. Fit your theory to the facts and don't distort your facts to suit your theory.

MIGRATION INTO AND OUT OF LONDON

THE post-war period has been signalised by extensive movements of population within this country. From the industrial regions in the north and from Wales the efflux has been most pronounced. So far this process of emigration has not caused an actual decline of population in the whole northern region,[1] as reflected in the estimated populations for 1925 and 1934. In this ten-year period there was, in fact, a slight increase of just under 69,000 in a region the total population of which exceeds 13 millions. Within this area a marked decline has occurred in the counties of Durham and Cumberland and a slight fall in Northumberland. In Wales and Monmouth, on the other hand, there has been in these ten years a decline of population amounting to more than 180,000 persons, mostly in the industrial counties of Glamorgan and Monmouth. Appreciation of what this means to Wales in terms of migration can be reached by adding to this figure the excess of births over deaths during the same period, approximately 127,000, which would have constituted the natural increase. Clearly communities which had planned their services on the assumption that the previous rate of growth would, if not be maintained, at least be affected mainly by the declining birth-rate, are hereby faced with serious administrative problems. But this is perhaps the least important result of the large-scale drift of population, for observers in the distressed areas draw attention to the fact that it is the best of the young people, physically, intellectually, and morally, who are leaving; and that these communities are, in consequence, becoming progressively less capable of helping themselves to find a way out of their misfortunes. This movement is partly to the prosperous midlands, but mainly toward London. It may therefore come as a surprise to those who have not studied the figures to find that the population of the administrative county of London is not increasing. The reverse is the case. For nearly forty years a falling birth-rate and emigration have combined to reduce steadily the population within the area administered by the L.C.C.

The effect of migration on London's population is dealt with in an illuminating contribution by Mr. C. A. Gould, B.Sc., to Sir Frederick Menzies's latest annual report.[2] Mr. Gould has attempted to trace London's inward and outward migration by two methods :—

(*a*) Since 1841, by comparing the expected number of survivors of a given age-group in the life table for each

[1] This region is defined by the Registrar-General as including Cheshire, Lancashire, Yorkshire, Durham, Northumberland, Cumberland, and Westmorland.

[2] London County Council: Annual Report of the Council, 1935. Vol. III. (Part I.): Public Health. London: P. S. King and Son. 1s.

census period with the actual number of persons ten years older recorded at the next census; and

(*b*) Since 1891, by the use of a formula for estimating the net movement in and out of the county during each intercensal decennium according to age.

The former method rather under-estimates the net migration, whether in or out, and both are measures only of the balance of migration, large movements in and out being capable of masking each other. The population statistics given relate throughout the period to the area comprising the present administrative county, which remains little changed since 1899.

The birth-rate during the period 1841–51 was 31·6 per 1000. It steadily increased to 35·4 in 1861–71 and then the fall began which, with a brief interruption in the immediate post-war years, has gradually brought it to 14·9 in 1931 and 13·3 in 1935. The death-rate has fallen continuously from 24·8 in 1841–51 to 12·3 in 1931 and 11·4 in 1935. The population grew rapidly during the first part of the period under consideration, from 1,949,277 in 1841 to 4,536,267 in 1901, the peak being attained about 1897, since when it has gradually decreased to 4,397,003 (*de facto*) in 1931. The process of migration which mainly accounts for this fall is revealed in the following Table:—

BALANCE OF MIGRATION, COUNTY OF LONDON—1841–1931

Intercensal period.	Population at the beginning of period.	Net migration during period.	Migration: Rate per 1000 mean population during period.	Outer ring.	
				Population at beginning of period.	Increase during period.
1841–51	1,949,277	+271,728	+12·9	286,067	+ 31,327
1851–61	2,363,341	+188,813	+ 7·3	317,394	+ 96,832
1861–71	2,808,494	+121,162	+ 4·0	414,226	+210,019
1871–81	3,261,396	+109,584	+ 3·1	624,245	+312,119
1881–91	3,830,297	−114,783	− 2·8	936,364	+469,488
1891–1901	4,227,954	−181,932	− 4·2	1,405,852	+639,283
1901–11	4,536,267	−553,993	−12·2	2,045,135	+684,538
1911–21	4,521,685	−322,004*	− 7·0	2,729,673	+266,005
1921–31	4,484,523	−330,976	− 7·6	2,995,678	+811,261
1931	4,397,003	..	..	3,806,939	..

* Excludes 74,000 war losses.
Migration *in* is represented by the plus sign.
Migration *out* by the minus sign.

The rate of influx into the county was greatest in the first decennium; it fell steadily till, in 1881, the process was reversed and by 1901–11 the net emigration rate had become almost as high as the immigration rate in 1841–51. The rate of outflow remained high at 7·6 per 1000 in 1921–31, during which period the greatest increase of all in the population of the Outer Ring has occurred. In other words, the Outer Ring is being fed partly by the suburban exodus of London's own population and partly by the drift from other parts of the country, more especially the distressed areas.

During the first three decennia there was an inflow of children under five; during the first two, of children aged 5–15. Until 1901 adolescents and young adults of both sexes immigrated in large numbers, the greatest number being in 1851–61. At this age (15–25) incoming females have always exceeded males and even since the influx of males changed to an efflux in 1901, young women have continued to come in at a greater rate than they have departed. Generally speaking, since 1861 children under 15 and adults over 25 have been moving out, taking away from the county that portion of the population which presents the greatest administrative problems in the field of education and public health, and transferring them to the home counties.

The problems of London are, of course, of a special character, but the process is somewhat similar to that which is occurring in most big towns, a migration to the suburbs, casting people who are, in effect, members of the town community into the net of adjacent county and district administration, calling for new services in the invaded areas and leaving the provision in the deserted towns to be utilised at a point moving further and further from saturation. The Local Government Act of 1929 has done virtually nothing to facilitate the adjustments of boundaries for which such a situation calls, and the decisions of Parliamentary committees as to local Bills for extension of boundaries are so fitful that urban authorities hesitate to seek this costly solution of their difficulties. In relation to the modern medical services it seems irrational that an arbitrary boundary running along a street, perhaps through a house, should determine a decision that fairly ample provision within easy access should be denied to those who happen to be on the wrong side of it, and that they should be dependent upon accommodation always lagging behind the needs of the new overgrowing population in the peripheral area. Indeed, the transfer of poor-law functions which took place in 1930 is rapidly revealing the imperfections of the present local government machine, unless it is supplemented by a much greater measure of joint action than the Act of 1929 seems to have contemplated.

MEDICINE AND THE LAW

Charitable Appeals on a Commission Basis

DURING Miss Jewett's libel action against the publishers of *John Bull* last week she gave interesting information as to the percentages which a charity organiser can receive. Appealing for the Disabled Officers' Garden Homes, she obtained 9*s.* in the pound on the amounts collected. She told the court that she had originally been engaged as a collector for the Royal Veterinary College, receiving from an agent 6*s.* in the pound. Later she was employed direct by the College at 5*s.* She had also worked for the Royal Veterinary Clinic, the Queen Charlotte's Hospital, and the Cancer Hospital, in each case at 6*s.* in the pound. The newspaper article of which she complained summed up its comments by saying that, if the patrons of charities were willing to permit the use of their names on appeals for money which enabled professional organisers like the plaintiff to pocket nearly 50 per cent. of the proceeds, their appeals were not worthy of public support. The jury found a verdict in Miss Jewett's favour, but assessed the damages at the derisory figure of one farthing. The Lord Chief Justice said that the action ought not to have been brought, and he refused to award costs. Lord Hewart intervened from time to time during the case to ask whether the benevolent public, when invited to subscribe, was ever informed of the proportion retained by the collector. Counsel for the defendants contrasted the system under which the plaintiff had organised her charitable appeals with the system prescribed for street collections. The latter are governed by Home Office regulations which forbid any payment being made to the collector by way of reward. When application is made for permission to hold a street collection, the applicant has to furnish answers to several questions. One

question requires the statement of the amounts to be paid to anybody connected with the appeal otherwise than as a street collector, together with the name and address of the recipient. This does not ensure that the man in the street knows the amount which the promoters will receive for their services. It does, however, afford the police an opportunity to check possible abuses and to refuse permission where confidence has been forfeited.

The modern elaboration of charitable appeals has evolved a technique which may seem to make professional organisation inevitable. Payment of the professional collector on the basis of a proportion of the sum collected is not necessarily improper. A witness from the Charity Organisation Society said that he had told Miss Jewett's employers that a commission of 9*s*. in the pound was extortionate; he had offered to suggest the name of a reputable charitable agency which would take no more than 7½ per cent. Asked in cross-examination if there were not plenty of charities employing organisers at more than 7½ per cent., he admitted the fact. He deplored the state of the law which permitted people to band together and call themselves a charity and to remain immune from legal proceedings so long as they devoted any fraction of the amount collected to the charity. Miss Jewett's counsel represented her as "a victim of the system invented by those busybodies who erect unnecessary charities." The Lord Chief Justice said she seemed to be a somewhat hungry victim. The case showed that neither fraud nor inefficency could be ascribed to the plaintiff, but the evidence may have disquieted the potential subscribers to charitable causes.

Responsibility of a Surgeon for His Assistants

The medico-legal responsibility of a surgeon for the actions of other members of the team during an operation has been stated with precision in a judgment given recently at Wellington in the New Zealand Court of Appeal. The case was one in which the patient, a married woman, claimed damages against a surgeon on account of injuries received in the operating theatre of a private hospital in Dunedin in October, 1932, through the alleged negligence of a nurse in painting part of her body with iodine containing carbolic acid in solution. The question for discrimination was whether the defendant surgeon was vicariously liable for the nurse's negligence. The court in its judgment stated that submissions made by counsel for the plaintiff would seem to impose an intolerable burden upon the surgeon. If they were rightly founded they would impose on him a legal responsibility for negligence in the operating theatre, even though he himself exercised all possible care and even though it was wholly impossible for him to guard against or prevent damage which actually happened. Under the conditions of modern surgery it was impossible for the surgeon to do the whole of the work involved in an abdominal operation, as in the present case he would be consulting, not only his own convenience, but the interests of the patient, in following the usual course of having work done by what is termed a "team." The operating surgeon, in truth, could only do part of the work if the operation was to be completed quickly. It was true the surgeon was in complete control, but those subject to control were skilled collaborators with independent duties and there was no delegation of duties in the ordinary sense. He did not intend, nor could he be taken to have intended, to do the work of others in the team. The defendant surgeon was held not to be vicariously liable for negligence found against the nurse and the court held that plaintiff was not entitled to recover damages against him.

IRELAND

(FROM OUR OWN CORRESPONDENT)

THE IRISH FREE STATE MEDICAL UNION

THE first general meeting of the Irish Free State Medical Union (I.M.A. and B.M.A.) was held in the Royal College of Surgeons on Nov. 5th, Prof. T. G. Moorhead presiding. The report of the scrutineers of the ballot for election of officers and council was read. It was reported that Dr. Conor Maguire, of Claremorris, Co. Mayo, had been unanimously elected president of the Union, and Dr. Robert J. Rowlette, of Dublin, vice-president. Dr. Maguire is one of the best known and most respected country practitioners in Ireland, and was a member for many years of both the Irish Medical Association and the British Medical Association. Dr. Rowlette was the last president of the Irish Medical Association, and had been president of the Leinster branch of the British Medical Association. The honorary secretary, Dr. J. P. Shanley, was able to report a satisfactory and steadily increasing membership, and the finances are in a sound position. The progress that has been made in establishing the Union is mainly due to the energy and labour of Dr. Shanley, who voluntarily undertook the duties of secretary when the sudden death of the medical secretary, Mr. T. Hennessy, occurred at the beginning of the year just as the Union had come into existence.

UNITED STATES OF AMERICA

(FROM AN OCCASIONAL CORRESPONDENT)

AMERICAN PUBLIC HEALTH ASSOCIATION

THE expanding field of public health was the main theme of the sixty-fifth meeting of this Association held in the humid heat of New Orleans on Oct. 20th to 23rd inclusive. Despite the oppressive climate the dominant note of the meeting was one of vigour and of progress. New life has been infused into the public health movement by the millions of dollars made available under the Social Security Act. Progress has been achieved not only in geographical extension of organised sanitation but also in the broadening conception of the province of public health. In his address as president-elect of the Association Surgeon General Thomas Parran, jun., called upon the health officers present to "use all methods given us by science to organise community attacks upon disease." Public health in the light of present scientific knowledge, he said, goes far beyond environmental sanitation. It must necessarily be concerned with all factors which make for healthful living; the prevention, alleviation, and cure of disease by all methods known to science; the promotion of the physical and mental status of the race; the provision of decent housing, healthful working conditions; facilities for recreation, food adequate in amount and kind for proper nutrition; and a standard of living compatible with normal family life and the upbringing of children. The provision of better housing, facilities for recreation, and of a useful job at a fair wage were, he continued, matters which directly affect the public health though they had not hitherto been thought of in relation to official health work. Other measures of direct

concern to the health department, though not necessarily provided by it, were bedside nursing care, medical, dental, and hospital services. Control of disease was possible only when adequate treatment for that disease is available, and wherever such treatment cannot now be obtained the health department cannot escape responsibility for the lack. The speaker referred to the coöperation in the control of pneumonia between the medical profession and the New York State department of health, also to the pioneer work in cancer control carried on in Massachusetts. He did not advocate standardisation of health administration. Indeed it is obvious enough that in this expanding conception of the province of public health no immediate delimitation of its responsibilities is possible.

A scholarly foundation to the newer claims of preventive medicine was laid in an address by Prof. Henry E. Sigerist of the department of medical history in Johns Hopkins University. Tracing the development of the concept of prevention through the peaks and depressions of medical history he showed how for the first time medical science has become the servant of the people as a whole rather than of any favoured class, and how the organisation of its resources is essential to the present task. The demand for better housing was echoed by Prof. C. E. A. Winslow of Yale, who described housing conditions among the poor of this country as worse than those among similar classes of any leading Western European country. The six million low cost houses that we need cannot be supplied by commercial enterprise as the affected families have incomes too low to pay an economic rent for housing of a minimum standard of health or decency. The claims of mental hygiene presented at the last meeting were reiterated this year. The health commissioner of New York State put in a claim for the consideration of accidents as a public health problem on the ground that so important a cause of death cannot be ignored by organised preventive medicine.

The dignity of the Association was protected by two important resolutions made by its governing council. The first of these was directed against the commercial competition of cities seeking the advantage of playing host to the annual conventions. It was determined to partition the United States into nine geographic areas. Each year the governing council will select two areas from one of which the convention city for two years hence will be subsequently selected by recommendation of the committee on meetings and publications. The other action concerned the commercial exhibits which have in recent years given rise in certain cases to severe and justifiable criticism. In future years the application of accepted standards of commercial probity will assure freedom from abuses.

The Sedgwick memorial medal, awarded annually for distinguished service in public health, was presented this year to Dr. Frederick F. Russell of the Harvard Medical School. The new president-elect of the Association is Dr. Arthur T. McCormack, health commissioner of the State of Kentucky. The health officers section chose as its new president Dr. Huntington Williams of Baltimore, and as vice-president Dr. George F. Amyot of Vancouver.

PANEL AND CONTRACT PRACTICE

Surgery Visitation

CHESHIRE insurance committee is concerned about surgery accommodation and has sent a deputation to the Ministry of Health to develop the committee's opinion that it is its duty and responsibility to ascertain whether insurance doctors are observing the requirement in the terms of service that they should provide proper and sufficient surgery and waiting-room accommodation for their insured patients. The deputation reported that the Minister's view is that until the contrary is proved it must be assumed, in the absence of a specific or general complaint, that the practitioner is complying with his terms of service and is providing the accommodation. There is nothing in the regulations to compel a practitioner to answer any inquiry by the committee about his accommodation and, further, insurance committees have no right of entry for the purpose of inspecting surgeries and waiting-rooms of doctors. An insurance committee, however, is entitled to proceed on a specific complaint by an insured person that he has suffered inconvenience or personal discomfort owing to inadequacy of accommodation or has not received that privacy in the treatment of his case that he considers he was entitled to. Further, the committee is entitled to investigate any general complaint relating to the accommodation of an insurance practitioner whether raised by an insured person, a member of the committee, or the clerk of the committee. After some discussion, in the course of which an approved society representative said that during the twenty-three years he had been secretary of a society he had not received a single complaint about surgery accommodation from his members, it was decided to invite the panel committee to appoint five representatives to meet five members of the insurance committee to examine the position. It will be recalled that there are already some areas in which panel and insurance committees coöperate in the visitation of surgeries. In such areas it has been proved that a timely word may prevent a practitioner from laying himself open to criticism.

Emergency Night-calls

The seventeenth annual report of the Ministry of Health includes summaries of cases of interest which have been the subject of appeal during the past year. One of these is unusual in that it does not relate to an alleged failure to provide treatment or to comply with the medical certification rules. An insurance committee's allocation scheme included a provision empowering the allocation committee to exempt a practitioner, with or without his application, from emergency night-calls to insured persons on the lists of other practitioners, when the practitioner resided more than two miles by road from his surgery and had no deputy, partner, or assistant residing at the surgery. This was to be subject to a right of appeal by the practitioner to the Minister against an enforced exemption. The distribution scheme included a provision providing, in effect, for the reduction of the exempted practitioner's remuneration by 5 per cent. Two practitioners appealed against decisions of the allocation committee exempting them from emergency night-calls against their will.

Both practitioners lived more than two miles by road from their surgeries, and neither had any resident deputy, partner, or assistant at his surgery, the surgery of one practitioner being outside (though on the border of) the insurance committee's area and his residence within the area, and the residence of the other practitioner outside and his surgery within, but both claimed that there was

a quick and efficient service for insured patients at all times owing to the presence of caretakers at the surgeries, the provision of telephone communication between the residences and the surgeries, and the practitioners' possession and use of motor-cars.

The practitioner whose surgery was outside the committee's area claimed that there had been no doctor in residence at the surgery for fifteen years, and that the insurance service had not suffered on that account. He admitted, however, that he did not receive patients at his residence, and that he had received no emergency night-calls to other practitioners' patients for the last nine years.

The practitioner whose residence was outside the committee's area claimed that the committee had given him permission to reside outside, subject to the already mentioned provision of communication between residence and surgery for the purpose of maintaining the efficiency of his service. This permission had, however, been given prior to the inclusion of the relevant provision in the allocation scheme, and the practitioner was unable to show that he was giving emergency treatment to patients on other practitioners' lists to any material extent.

In both cases it was held that the enforced application of the exemption from emergency night-calls to other practitioners' patients was justified, there being no sufficient evidence to dispel the presumption that the practitioner's residence so far from his surgery diminished the liability to emergency calls at night.

GRAINS AND SCRUPLES

Under this heading appear week by week the unfettered thoughts of doctors in various occupations. Each contributor is responsible for the section for a month; his name can be seen later in the half-yearly index.

FROM A DOCTOR IN RETIREMENT

II

IT IS always of interest to observe in what way a busy man occupies his spare time. Usually it is the man who works hardest and works the longest hours who contrives to find time to do other things as a relaxation and hobby during the odd hours which he has to himself. It is only the lazy, the dull, or the stupid man who can find nothing of interest to do in his leisure. Once the necessity for occupying his mind on his one employment is gone, his mind sags and he becomes a burden both to himself and to his family and a bore to his friends.

* * *

No professional man works longer hours or works harder to earn his living than the country doctor, and yet, I maintain, more country doctors occupy their leisure in interesting occupations than do the members of any other profession. I think I perceive the reasons for this. First of all, the very nature of his work requires the country doctor to spend much of his spare time at home, for even when he has no actual work to do—patients to see, books to keep—he still must be at home or near at hand in case of a sudden urgent call. This perpetual threat of interference with his private life is never absent; never day or night can he be free of the possible fear that his services may be required. Therefore his hobby must be one which he can carry on at home or quite near home. Consequently a great many country doctors—"the backbone of the profession" as the tactful and diplomatic consultants style them at medical gatherings—take up gardening. And very good gardeners they make. Most country doctors have "green fingers," as the saying is, and can make a plant grow and thrive which would wilt and wither in other hands which are not "green fingered," lacking that mysterious sympathetic touch which all successful gardeners possess. A garden gives the country doctor just that form of relaxation and mental occupation which he requires. There is exercise in it, but not too violent; it keeps him in the open air, for each season has its own particular problems and tasks. What are the rewards for gardening? Health, a happy contented mind, and a pleasant sensation of successful achievement, a lovely garden to surround his home, and lovely flowers to adorn his house, and incidentally, an absorbing subject to discuss with his patients and so distract them from long wearisome recitations about their minor symptoms.

This hobby of gardening is a particularly happy choice for a member of our profession for when the time comes and he will be able to relinquish his practice and go into retirement he will already have to hand a pleasant occupation to pass his time both usefully and happily. Many professional and business men—though not generally doctors—go airily into retirement under the false belief that from then onwards life will be one long jolly holiday; the doctors anticipate a period of ease, with no patients to bother about, no slumber-shattering telephone, no tiresome panel committee, no coroner's inquests; and yet how few meet this important climacteric prepared for the change; most enter it without any definite plan before them as to how they will employ their whole-time leisure? But the gardening doctor has already provided himself with the solution for happy retirement. The only change for him will be that henceforward he will be able to spend whole days at his favourite pursuit when previously he could snatch only an occasional hour which at any moment was liable to be filched from him.

* * *

Therefore I say to you country doctors who contemplate retirement, do not bother too much where you will live, granted of course that it will be in the country, but see that your house has a garden. As big a garden as you can afford the money and the time to keep up, but do not be tempted to go beyond your resources. A small garden well tended is far better than a large one you cannot take proper care of. Never mind if your new garden is in a state of chaos, if nettles, brambles, and docks run rampant. So much the better, for it is far more fun to make a garden where no garden was before, than to become possessor of a spick-and-span one, made by someone else—one in which there is little for you to do but carry on with what was designed and planted by your predecessor.

* * *

These reflections about the why and the wherefore of country doctors and their gardens suggest that the connexion between doctors and gardens goes back a very long way. From the Middle Ages onwards a doctor had to be something of a gardener as well as a botanist, for his garden was to a large extent what his wholesale druggist is to-day. In his garden he grew those herbs and various medicinal plants with which he concocted his simples or dispensed those alarming indiscriminate prescriptions so in favour with the Elizabethan physician and apothecary. It

always gives me a slight feeling of sadness when I walk down that drab and dreary City street Fetter-lane to recall that here stood the famous garden of the author of the greatest of all English herbals John Gerard (1545–1612). There he grew over one thousand different herbs as well as many "rarities," ranging from white thyme to the double-flowered peach. His house was only a short walk away in the village of Holborn, and Gerard tells in his "Herball" how in Gray's Inn Lane he gathered mallow, shepherd's purse, sweet woodruff, bugle; and Paul's coloured rocket, yarrow, lesser hawkweed, and the curious strawberry-headed trefoil; while on the walls of the houses flourished golden stone crop and wallflowers. Gerard must have been a busy man, for besides running a large and fashionable practice, he found time to write his huge herbal, tend his garden in Fetter-lane, superintend the gardens belonging to Lord Burleigh in the Strand and at Theobalds in Hertfordshire, and act as an examiner of candidates for the admission to the freedom of the Barber-Surgeons' Company. How fortunate it is that old John Gerard never saw or never dreamed of the horror which now covers his fair garden.

PUBLIC HEALTH

Bacteriological Tests for Graded Milk

A MEMORANDUM [1] just issued by the Ministry of Health sets out the procedure to be adopted under the Milk (Special Designation) Order, 1936, for the collection of samples, their transport and storage, and the laboratory technique of the various tests. The memorandum leaves nothing to chance manipulation or to varying practice, for every procedure is set out in minute detail. This applies to sampling and transmission of samples just as much as to laboratory tests. The different laboratory methods described are for the methylene-blue test, the coliform test, and the plate-count test, this last being still required for tuberculin-tested milk (pasteurised) and for pasteurised milk.

The methylene-blue test in its old form has been shown to be very unreliable, but the present modified test is advanced as a great improvement and capable of yielding results in actual practical working superior to other procedures. To yield these results it has to be carried out with precision and under closely specified conditions. These include the use of standard methylene-blue tablets, a reliable water-bath with dark interior and capable of regulation between 37° C. and 38° C., special precautions as regards glassware and the usage of pipettes, detailed instructions as to mixing the milk and adding the methylene-blue, and in particular regular inversion and mixing of the contents. It is obvious that the reliability of this test for the particular purposes indicated will largely depend upon attention to these minute directions and all bacteriologists should take pains only to perform the test under the conditions presented. Only with tests so performed will it be justifiable to criticise its utility. Another feature of the test as now applied, which was often neglected in the old test, is the rigid sterility under which it is to be performed.

Assuming its reliability under these controlled conditions, the methylene-blue test will still be subject to several limitations. In the first place it is essential to inspect and invert the tubes at half-hourly intervals and, particularly in small laboratories, this is not very convenient. A more serious objection is one voiced by Mrs. L. A. Foot in a letter in our issue of Nov. 7th—namely, that the test is positive or negative but no more than this. It gives no indication of the degree of success or failure so that the producer may, by definite quantitative data, be encouraged with success or stimulated by failure. This is a genuine criticism which can hardly be met, since it is inherent in the test.

The coliform test has been retained and its inclusion is received with mixed feelings by bacteriologists. On the one hand they welcome the retention of a test which is definitely useful, but on the other it has to be remembered that one primary advantage of the methylene-blue test was the saving in glassware and the time of its cleaning and sterilisation and the absence of the cumbersome dilution of the milk necessary for bacterial enumerations. With the retention of the coliform test some of this extra work is still necessary. The position is somewhat simplified by the suggestion of the Ministry that it is not necessary that every sample should be submitted to both tests, and it is probable that such a procedure will be widely followed.

It is still too early to decide whether the modified methylene-blue test will in practice give what it aims to give, a reliable index showing whether the necessary cleanliness in milk production and care of the milk subsequently is being practised. Tests such as the addition of a little manure to milk and comparison of results with those of the coliform test are not really satisfactory. Its utility can only be truly assessed by very careful comparisons between inspection reports and laboratory findings, and it is to be hoped that the test will be subjected to this scrutiny.

[1] Memo. 139/Foods. London: H.M. Stationery Office. 3d.

Fumes in a Printing Works

Last week eight workpeople—six women and two men—were taken ill at a printing works in Birmingham with the suspicion of fume poisoning. It seems that a girl was first affected; she fainted at her work, and when another girl went to help her she was also overcome with an attack of crying and laughing. Next, a boy working at a printing machine became sick and fainted. Of the eight persons removed to hospital one was detained for the night; five were able to resume their work in the morning. The symptoms are ascribed to inhalation of carbon monoxide from the burner of a stereo-apparatus to which access of air was insufficient for complete combustion. It seems that work was being done that day with closed windows and the trouble did not begin for three hours when the concentration of carbon monoxide must have become considerable. Attention to ventilation and to the state of the burners should prevent any recurrence of such an accident. The question whether a stove of this kind should be installed without a flue is for the factory department to answer.

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED OCT. 31ST, 1936

Notifications.—The following cases of infectious disease were notified during the week: Small-pox, 0; scarlet fever, 2295; diphtheria, 1250; enteric fever, 18; pneumonia (primary or influenzal), 813; puer-

(*Continued at foot of opposite page*)

CORRESPONDENCE

CHRONIC ULCERATIVE COLITIS

To the Editor of THE LANCET

SIR,—Your annotation last week on chronic ulcerative colitis shows that, in common with those who took part in the discussion at the Royal Society of Medicine, you are not inclined to support Bargen's claim as to the rôle of the diplostreptococcus in the ætiology of the disease. You state, furthermore, that his results from treatment with specific sera and vaccines have not been confirmed by others.

I think that the reason clinicians in this country have not been able to obtain the good results reported by Bargen is that they have never given his method a fair and proper trial, but have been content to fall back on bacteriological platitudes such as the statement that the Bargen organism can be isolated from the bowel of healthy persons. I was fortunate in being on the staff of the Mayo Clinic when Dr. Bargen was carrying out his early investigative work, and had the opportunity to observe personally the tremendous improvement in the outlook in these cases after the introduction of treatment by specific vaccines. In this country my first chance of trying the method came in 1927.

The patient, a young man of 26, had suffered from very severe ulcerative colitis for over three years. He had spent about 20 months as an in-patient in two well-known institutions which specialised in colon disorders but without any improvement, though he received slight temporary benefit from protein shock injections. After the fourth injection of a vaccine of the Bargen diplostreptococcus his motions, which varied from 8 to 30 in the 24 hours and contained blood and mucus, were reduced to 3 or 4, and by the end of a month he was perfectly well, passing one or occasionally two motions in the 24 hours, and the motions were solid for the first time for over three years. Except for a slight remission a year later which responded promptly to vaccine treatment, this patient has remained completely well since, and has been constantly at his work.

During the last nine years I have treated in the Victoria Infirmary, Glasgow, over 30 cases of ulcerative colitis with a vaccine prepared from the Bargen organism. The results have been most encouraging. The only auxiliary measures employed have been a full diet, ferri et ammon. cit., and occasionally a bismuth preparation. Not all patients have responded equally well. Older patients were more refractory and were more liable to remissions. Again, those patients in whom the diplostreptococcus could not be isolated and who had to be treated with a stock vaccine did not do so well on the whole as those in whom the organism was isolated from the floor of the ulcers. Remissions have not been uncommon, but they have all responded to further vaccine treatment. I can recall only 3 cases which appeared refractory to treatment. I have never employed any form of local application to the colon, nor has operation been necessary in any case. There has been only one death and this occurred in a fulminant case, in which the patient died 48 hours after admission to hospital before treatment could be instituted. I do not think I have been able to improve my results in recent years by the use of the stock serum which is on the market, and I have had no facilities for the preparation of a serum from the strains of the organism isolated from patients under my care.

My personal belief is that in most cases of chronic ulcerative colitis there is an allergic basis, and that the Bargen diplostreptococcus is the chief of the secondary invaders. I am not concerned with abstract discussion as to whether the vaccine acts specifically or by some form of protein shock. That after all is only part of the larger problem of the mode of action of vaccines in general. The important point I wish to emphasise is that in vaccine therapy we have a most useful therapeutic measure for the control of chronic ulcerative colitis and one which is worthy of an extensive trial. If good results can be obtained at the Mayo Clinic and also in Scotland, there seems no valid reason why they should not be obtainable further south. It would appear, however, that in the south the attitude towards ulcerative colitis is still too "tropical," and that antidysenteric sera, Yatren, colon lavage, and operation still occupy too prominent a place in treatment.

And lastly, it is not conceivable that at the Mayo Clinic a form of treatment would be persisted in for over twelve years if it had not proved to be the most effective measure at present available for the control of the disease.

I am, Sir, yours faithfully,

Glasgow, Nov. 9th. ROBERT MAILER.

(*Continued from previous page*)

peral fever, 46; puerperal pyrexia, 127; cerebrospinal fever, 11; acute poliomyelitis, 10; encephalitis lethargica, 8; continued fever, 1 (Preston); dysentery, 22; ophthalmia neonatorum, 80. No case of cholera, plague, or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the London County Council on Nov. 6th was 3057, which included: Scarlet fever, 1152; diphtheria, 906; measles, 28; whooping-cough, 331; puerperal fever, 15 mothers (plus 8 babies); encephalitis lethargica, 285; poliomyelitis, 3. At St. Margaret's Hospital there were 11 babies (plus 6 mothers) with ophthalmia neonatorum.

Deaths.—In 122 great towns, including London, there was no death from small-pox, 1 (0) from enteric fever, 5 (0) from measles, 2 (1) from scarlet fever, 12 (6) from whooping-cough, 45 (6) from diphtheria, 60 (14) from diarrhœa and enteritis under two years, and 36 (10) from influenza. The figures in parentheses are those for London itself.

Exeter reported the only fatal case of enteric fever. Bristol had 3 deaths from whooping-cough. Fatal cases of diphtheria were reported from 25 great towns: Liverpool 6, Luton, Birmingham, and Bristol each 3.

The number of stillbirths notified during the week was 259 (corresponding to a rate of 42 per 1000 total births), including 43 in London.

INJECTION TREATMENT OF HERNIA

To the Editor of THE LANCET

SIR,—I have read with interest the annotation on this subject in your last issue. I can never understand why this method of treating hernia has not found favour in this country. In the United States, where it has long been on trial, the reports are very favourable. Some American surgeons in their reports give results which are as good or even better than those of operation. At the same time I would like to urge that injection should not replace operation unless there is good reason. The method is particularly appropriate for cases which would be bad surgical risks and could be treated alternatively by injection or for patients who refuse operative interference.

As regards the solutions employed for injections, the Americans use many. Unfortunately it is very difficult to get these solutions made in this country, owing to our pharmacopœia being different. I have, therefore, used in my practice a twin or double

solution. This consists of equal parts of (*a*) quinine-urethane and (*b*) lithocaine (lithium salicylate + tutocaine). These two solutions when they come in contact with each other form a heavy precipitate, and when injected into the hernial canal the mixture remains localised and sets up an aseptic inflammation, the end-result being fibrosis.

I notice also that some advocates of this method of treating hernia advise starting the injections lower than in the inguinal canal, close to the external ring, and then injecting higher up towards the internal ring on each successive injection. I am not in favour of this plan, since in my opinion it is much easier to start high up in the inguinal canal and carry on the injections lower down the canal towards the external ring. I am, Sir, yours faithfully,

Wimpole-street, W., Nov. 10th. MAURICE LEE.

COMMUNAL RESTAURANTS

To the Editor of THE LANCET

SIR,—The subject of nutrition has been much discussed in your journal during the current year; is it not desirable that there should be some practical application of the knowledge? I believe the only way in which changes can be made in the deficiences of diet which exist to-day, on a scale that might eventually reach all the people, is by communal restaurants for each group of houses or flats.

This is especially important in housing estates for the working class, because one woman cannot perform the task of tending a family, cleaning, sewing, feeding, and so forth, and also, with expert knowledge of food values, buy wisely, and cook so as not to spoil the foods. Moreover, if she were capable of doing all these things, under present conditions she could not overcome the difficulties of buying cheaply in a fresh market. Only a direct and skilled link between agricultural units and feeding centres, with a trained dietitian and cook at each centre, could provide what is needed at prices within the possibility of working-class families.

If for each 10 or 12 dwellings there were attached a laundry, a creche, and a restaurant with 10 or 12 family tables or alcoves, a free choice of menus planned with expert knowledge might be given, and the children would be catered for at a convenient hour, with food suitable to their age and need. A snack bar running in the evening would enable young people to entertain their friends in the vicinity of home. The head of such a centre would collaborate with the nearest agricultural unit to secure the necessary production and direct delivery of fresh dairy produce, vegetables, fruit, and meat.

Scattered gifts of milk or even meals to mothers and children, helpful as they are, are not enough. The dietary of the whole nation needs to be put on a sound basis, which would meet the needs of all ages, while retaining the best facilities for family life.

I am, Sir, yours faithfully,

FLORENCE E. BARRETT.

Devonshire-place, W., Nov. 5th.

"THE ÆTIOLOGY OF ACUTE RHEUMATISM"

To the Editor of THE LANCET

SIR,—I hope, though I fear in vain, that "Streptococcus pyogenes" will not be accepted by the medical profession as the name for a cause of acute rheumatism if this disease is streptococcal. Naturally I believe it is a streptococcal disease, but even the old term, which will no doubt raise a smile, "Diplococcus rheumaticus," was more accurate and helpful. Perhaps I am a pessimist, but it seems to me modern medicine, excepting the attempts upon new lines such as the virus, only makes the problems more difficult by diffuse and confusing nomenclatures, and to add "Streptococcus pyogenes" as the term for a possible cause of a disease generally accepted as non-suppurative and very special in its clinical features is to increase the chaos.

I should be interested to hear the opinions of others who have recently worked at this problem on broad lines—i.e., both clinical and pathological—upon this question of "Streptococcus pyogenes." Time has been my master, but fifteen years of steady research, even if now out of date, is I believe sufficient excuse for this letter. I am, Sir, yours faithfully,

Bath, Nov. 9th. F. JOHN POYNTON.

ARTIFICIAL PNEUMOTHORAX

To the Editor of THE LANCET

SIR,—I am sorry to note that in your issue of Nov. 7th Dr. F. A. H. Simmonds, writing about my recent report on artificial pneumothorax, states that whilst the work gives "a picture of the value of pneumothorax treatment in attacking the whole problem of tuberculosis in London" it does not provide "help for the clinician faced with a patient apparently suitable for the treatment, who would wish to know results in similar cases."

It is true that my findings will not foretell with certainty the fate of any individual patient who is to be treated by the method, but it is thought that the clinician will get some guidance in a general way from a study of the report. Thus he will learn that in positive sputum patients who underwent complete collapse and became sputum negative on discharge from residential treatment no less than 90 per cent. of the subjects were alive after three years. He will learn that, with complete collapse cases in general, 66 per cent. of the patients were alive after three years and that, when the disease was strictly unilateral, the percentage survival rose to 77. Again the results show that, in incomplete collapse cases, only 50 per cent. of the patients survived three years. Many other indications were also given as to the value of the method in various types of case. It is because the results were found to vary so markedly in the different groups that it was thought wise to emphasise that the original choice of case must be made with the utmost care.—I am, Sir, yours faithfully,

London, Nov. 6th. F. J. BENTLEY.

THE ROYAL COLLEGE OF SURGEONS AND ITS MEMBERS

To the Editor of THE LANCET

SIR,—Once again at the annual meeting of the Royal College of Surgeons to be held on Nov. 19th, amongst other matters of interest, the question of representation of some members on its council will be discussed. It is now 90 years since the charter was obtained conferring the entire control of the College on the fellows, then specially created, to the entire exclusion of the members, who formed the original electorate of the College. From that time till now a continuous and vigorous protest has been made year by year by the members. For nearly half a century at every annual meeting of the College a resolution of protest and a request for some representation on its council has been carried by a large majority of the fellows and members.

Within the past few years a questionnaire to members showed an overwhelming majority of those circularised favourable to this resolution. It must surely be a unique experience that so persistent, moderate, and reasonable a request, made by three

successive generations of members, and supported by some of the most eminent of its fellows, and at least by two of its presidents, should still remain ignored by the Council. The late Lord Moynihan was a supporter of this claim, and on the council during his presidency a very large number of the council, though not a majority, were believed to be favourable. Recently questions associated with the medical curriculum—osteopathy, chiropody, diplomas in dietetics, &c.—were before the council, but no member in general practice with first-hand knowledge of the problems was present to assist the council and represent the views of the general body of members.

The relations of the council and fellows vis-a-vis the members is now a happy and friendly one, and the moment eminently suitable for settling this long-standing grievance with advantage to the College and its fellows and members, and to the profession—and indeed to the public at large.

I am, Sir, yours faithfully,

Eccleston-square, S.W., Nov. 9th. REDMOND ROCHE.

RADIOGRAPHY OF THE HANDS IN CHRONIC RHEUMATIC DISEASES

To the Editor of THE LANCET

SIR,—In commenting on our paper in your issue of Oct. 17th, Dr. Gilbert Scott expresses doubt about the existence of erosion at articular margins in early cases of rheumatoid arthritis. We must confess that we felt surprise at the frequency with which we observed this in spite of its omission from his comprehensive book on this subject.

While reproductions of radiograms may fail to show up very clearly the fine trabecular outline resulting from erosion of the compact bone, the description we gave in the text should prevent confusion with variations in shape and form that may be found in the normal hand. We would like to point out that although the series of cases which we published numbered only 154, in actual fact we radiographed the hands in well over 500 cases. We limited the number of cases published to those in which biochemical investigations had been performed in an attempt to correlate the clinical and biochemical findings with the radiograms of the hands.

We are, Sir, yours faithfully,

G. R. P. ALDRED-BROWN,
Bath, Nov. 9th. G. D. STEVEN.

ANÆMIAS OF PERNICIOUS TYPE

To the Editor of THE LANCET

SIR,—From the paper by Drs. Elman and Marshall in your last issue (p. 1094) two interesting points emerge. First, any form of leukæmia (leucosis) may run a permanently or temporarily aleukæmic course. There is no longer any justification for Pinkus's statement that the aleukæmic form is usually lymphatic in type. Secondly, it is quite possible that the nature of the malady would have been recognised in the early stages if the differential leucocyte count had included the evaluation of the Arneth count instead of referring to all the neutrophile cells as polymorphs.

Enumeration of the lobes of the neutrophile cells always shows that some of them are excessively lobulated in cases of pernicious anæmia, and others are unusually simple in nuclear configuration. In other words, in pernicious anæmia, there are shifts both to the right and to the left. As a general rule, in cases of aleukæmic myeloid leukæmia (aleukæmic myelosis), the neutrophiles show a distinct shift to the left. So that, although there may be no myelocytes present, metamyelocytes of various degrees of maturity may be found. In the absence of evidence of infection, such a blood picture is extremely suggestive of aleukæmic myelosis.

It is usually stated that the early stages of the leukæmias have not been recognised, and the explanation of this may be that they have not been looked for by a method capable of revealing them.

I am, Sir, yours faithfully,

Park-square West, N.W., Nov. 6th. A. PINEY.

"IDIOPATHIC" EPILEPSY

To the Editor of THE LANCET

SIR,—In your leading article of Nov. 7th referring to Dr. Bateman's record of brain changes in 176 cases of epilepsy I do not see any reference to the cerebellum. Although no macroscopic lesion can usually be detected excepting at times small areas of sclerosis—which, by the way, are easily missed if the operator wears gloves—an almost constant microscopic lesion in epilepsy is a marked atrophic and fuchsinophil change in the molecular (synaptic) layer of the cerebellar cortex. This is of a patchy nature and somewhat similar changes are met with in cases of manic-depressive insanity, though these are of a lesser degree, more peripheral and more constantly associated with a marginal gliosis. These cerebellar changes in epilepsy and manic-depressive states mainly affect the dendritic or synaptic layer in contradistinction to those met with in dementia præcox, which are essentially nuclear.

I am, Sir, yours faithfully,

B. H. SHAW,
Medical Superintendent, County Mental Hospital, Stafford.
Nov. 7th.

VOLUNTARY HOSPITALS AND THE NEW ACT

To the Editor of THE LANCET

SIR,—As the introducer of the Bill which as amended became the Voluntary Hospitals (Paying Patients) Act, 1936, I have read with interest your annotation of Oct. 31st in which you quote Section 2 (2) of the Act.

> The committee of management may charge such patients as aforesaid for accommodation and maintenance (including such medical and surgical attendance and treatment as is given by the resident staff of the hospital) in accordance with such scale of charges as may be specified in an order.

It is not possible for a layman to say how an Act of Parliament will be interpreted. But the intention of the words in brackets was, not to provide that fees should be payable to the resident staff, but to make it clear that the control by the Charity Commissioners over the scale of charges would not extend to fees paid by the patient to the visiting staff but only to charges made by the hospital for accommodation and maintenance, including any services rendered by the resident staff.

Your original summary of the section would be consistent with this interpretation.

I am, Sir, yours faithfully,

Portman-square, W. Nov. 10th. LUKE.

To the Editor of THE LANCET

SIR,—Your annotation (Oct. 31st, p. 1051) and Mr. Bedwell's reply (Nov. 7th p. 1123) tempt me to ask whether the time is not now ripe to establish a London Hospitals Board with plenary powers to enforce a more friendly collaboration between council and non-aided hospitals.

Mr. Bedwell's analogy of Church and Council schools seems to be a perfectly fair one. Why should the

State be willing to subsidise the medical schools and indeed all the colleges of the University of London for advancing education, and yet be reluctant to make obligatory, instead of optional, the raising of a local rate for what, in the opinion of many, is the far more important task of improving the health of the nation? It would be easy to elaborate the idea and to make constructive proposals, but I must not take up any more of your space.

I am, Sir, yours faithfully,

The Athenæum, Nov. 10th. A. D. POWER.

VITAMIN-C DEFICIENCY IN ADDISON'S DISEASE

To the Editor of THE LANCET

SIR,—Dr. [H. E. Archer estimated the vitamin-C excretion and storage in a woman with Addison's disease who was under my care early this year. The results were different from those reported by J. F. Wilkinson and C. A. Ashford in your issue of Oct. 24th, and it would appear that vitamin-C deficiency is not a cardinal symptom of Addison's disease and that it is not intimately associated with the pigmentation. The patient was a woman of 43 with asthenia, nausea, and vomiting, cutaneous and mucosal pigmentation, average blood pressure 90/60, highest blood-urea 90 mg. per 100 c.cm., lowest serum sodium 315 mg. per 100 c.cm. She made little improvement on treatment with sodium chloride but responded well to Cortin injections. The estimations of her ascorbic acid excretion were made a few days after admission to hospital, the ascorbic acid being given by mouth:—

ASCORBIC ACID

Date.	Intake. (mg.)	Urinary output. (mg.)
Feb. 21	0	11·39
„ 24	0	11·8
„ 25	1000	326·0
„ 26	1000	532·0
„ 27	1000	776·0
„ 28	100	201·0
„ 29	100	Not estimated.
Mar. 1	100	Not estimated.
„ 2	100	67·5

In this patient, therefore, storage and excretion of vitamin C were within normal limits.

I am, Sir, yours faithfully,

L. J. WITTS.

St. Bartholomew's Hospital and College, London, E.C., Nov. 10th.

BRITISH MEDICAL ASSOCIATION

THE COUNCIL DINNER

ON Tuesday, Nov. 10th, a dinner was given by the Council of the British Medical Association in the Association House, Dr. E. Kaye Le Fleming presiding.

After the royal toasts had been drunk Prof. R. M. F. Picken, proposing the toast of The Common Health, said that though it was to-day widely disputed whether health was common or not, historical and numerical data seemed to prove that the health of the people was not deteriorating. He spoke of the work of the Association in setting up committees to consider the problems of nutrition and physical fitness, but struck a warning note against exaggerating its benefits, for disease may attack even a well nourished body. The best defence of health was a well trained and well utilised medical profession and Prof. Picken attached much importance to the proper training of medical students in the preventive aspects of medicine.

In coupling Sir Kingsley Wood's name with the toast he thanked him for his courtesy to the profession in the past and promised him the continued support of the Association in the future.

In reply, Sir Kingsley Wood cited his fellow guest, Sir Thomas Barlow, as a good example of what the common health should be. He said that Lord Nuffield's munificence had given not only money, but courage and inspiration to all who were striving to build up our medical services. As a layman he was struck by the ever-increasing complexity of medical science and in this connexion he stressed the important rôle played by the family physician in the early diagnosis of disease, for he was the first line of defence and on him rested the duty of the prompt allocation of suitable cases to the appropriate quarter for further help. In the battle against cancer in particular the family physician was in the front of the struggle. Referring to the Government's campaign for a Better Britain, he deprecated such headlines in the press—which had met his eye—as "British people to be made fitter by law." There could be no mass production of national health, it was not only knee-bends and jerks that were wanted but all that went to build a healthy mind in a healthy body, and he wished to assure the Association that the housing campaign and the maternity and child welfare services would not be slackened. The Government planned in the future not only to protect the health of the masses by the provision of good sewage and clean water, but also to build up the health of the individual.

In a witty speech Sir Farquhar Buzzard proposed the health of the Guests, whom he compared for their number to the Milky Way, while he declined to differentiate them as fixed stars or planets, as those who held official or political positions could not be fixed. Among those to whom he referred by name were the Marquis of Zetland, Sir John Megaw, Lord Nuffield, the heads of the Navy, Army, and Air Medical Services, and the vice-chancellors of the Universities of Oxford and London, and the president of the Royal Society. Sir William Bragg, P.R.S., replying, said that it was nice to meet doctors somewhere else than in their waiting-rooms. He referred to the scholarships recently founded by the Royal Society for research into the problems of malaria, and of nutrition in India. And although a chair-attendant in Hyde Park had lately told him that "what was wrong with the blinking world was too much science," he still felt sure that in the long run pure science always had its application and conspicuously in the sphere of medicine. Mr. H. L. Eason also replied for the Guests and in the course of a gay little speech expressed his pleasure that as yet there was no sign of Hay dieting among the Association.

Sir Kingsley Wood proposed a hearty vote of thanks to the chairman, and Dr. Le Fleming in reply referred to Dr. G. C. Anderson's coming visit to India to inquire, among other things, into the problem which has arisen there in connexion with the so-called native licentiates who practise alongside the graduates from the universities.

At the close of a highly successful function the company stood for the rendering of the National Anthem.

LONDON HOMŒOPATHIC HOSPITAL.—The mayor of Holborn on Oct. 30th opened the extension to the casualty department of this institution. The extension has cost £2000.

OBITUARY

SIR ALFRED PERCY BLENKINSOP, K.C.B., C.M.G., M.R.C.S.

MAJOR-GENERAL AND COLONEL COMMANDANT, R.A.M.C.

WE announced last week the death of Sir Alfred Percy Blenkinsop on Nov. 3rd. The occurrence was a sudden one, and the news has been received with widespread regret in the large circle with which his official position had brought him in contact as well as among an unusual number of personal friends.

Major-General Sir Alfred Percy Blenkinsop was the son of the late Lieut.-Colonel William Blenkinsop, and was born in 1865 and educated at King's School, Canterbury, and University College, London. He took the qualifications of the English Conjoint Board in 1887 and immediately entered the R.A.M.C., where his career was afterwards to become so distinguished. He became Brevet Lieut.-Colonel in 1910 and Lieut.-Colonel two years later, and was for a time Assistant Commandant at Millbank. His first foreign service was in Sierra Leone, but he saw two years' service in the South African War and proved his qualities by obtaining the Queen's medal with three clasps and the King's medal with two clasps. He was then appointed Assistant Director of Medical Services in India, a post which he held for two years, but just before the war he was called to the War Office in the position of A.D.G. Heavy official duties claimed him for the next two years, but in 1917 he was relieved of these by selection for the important and responsible post of Director of Medical Services in Mesopotamia. He proved a highly successful officer and administrator in difficult and often critical circumstances, was mentioned in dispatches four times, and received C.M.G. and the Order of the Crown of Rumania as a Grand Officer of the Order. He retired from the service in 1923 when he received the K.C.B., and was appointed honorary physician to the King and Colonel Commandant R.A.M.C.

SIR A. P. BLENKINSOP

[Photograph by Elliott & Fry

We owe to Major-General Sir Guise Guise-Moores the following tribute to his brother officer:—

"The death of 'Blenky,' as he was known throughout the Service, has by its suddenness brought home to his many friends in many lands the loss they have severally sustained; and to the corps to which he was conspicuously identified an abiding sense of regret. His recent appearance at the annual dinner belied any thought of an abatement of his striding vigour, or the persistence of his mental powers. Sir Percy, like his brother General Sir Layton Blenkinsop, out-talled the tallest of men, and his presence in any gathering of them at once focused attention.

"My first actual contact with him was in the pre-war days when he occupied the post of Assistant Commandant at the R.A.M. College, Millbank. There his dominant personality was always to the fore in meeting and solving the varied problems incidental to the organisation of a teaching institution, and to framing disciplinary measures essential for young candidates seeking commissions, who for years emancipated from restriction, had perforce to fall into ways that could never be ways of gentleness, and to follow paths that could not always be paths of peace. Blenkinsop possessed a code of action—conduct typical of his character and upbringing, and invariably regulated by the soldierly qualities of truth and justice.

"On the termination of his tenure of office at the College he left for the East, and when Arthur Sloggett became D.M.S. India in 1912, he invited Blenkinsop to be his staff officer. India, a land of regrets to so many, was never a country whose council took cognisance of the needs of the medical services—for peace or war. Finance took good care against that, and its medical department had not at any period of our occupation been modernly or adequately equipped, except in 1910–18—but that's another story. Both Sloggett and Blenkinsop, early realising this, were glad to quit the country, and it was reserved for Babtie later on to meet the slings and arrows of misfortune, that in justice finance alone should have met. Sloggett was ordered home in 1914 to take over the duties of D.G., A.M.S. at the War Office, and Blenkinsop accompanying him became his A.D.G. There he remained till 1917. Sloggett left for France in 1914, and Blenkinsop then came under the ægis of Sir Alfred Keogh, who then returned to the D.G.'s vacant chair. The two Irishmen soon learnt to understand one another in trust and in deed, and to his subordinate, Keogh left in its entirety the immensity of the provision of the R.A.M.C. personnel required for all fronts—a gradually increasing entity which at end outnumbered the original Expeditionary Force—the old contemptibles. Homecoming on occasional leave from France, it was my privilege to seek out 'Blenky' in his sanctum. He sat from day to day wrestling with the intricacies of figures, numbers, and reinforcements with an enigmatic reticence on all things personal and impersonal, in sheer loyalty to his chief; but at heart, with one objective indelibly lined on the tablets of his mind—that of freedom to come. He fretted under the curb of a sedentary restriction that the work at the War Office entailed, and longed to ride away under the snaffle—a free man. This was his set determination to attain, an obsession as fixed as the eyeglass he invariably wore, and so advantageously used for subjective purposes, as and when occasion called for its concentration on the interviewed or interviewer. The day arrived in the waiting when patience and perseverance were rewarded, and in 1910 Blenkinsop left for the Near East on being appointed D.M.S. British Forces in Mesopotamia and the Black Sea. Here was freedom with a reality. He soon obtained a working knowledge of the climatic conditions and the diseases incidental to the country. He organised and perfected its hospital, sanitary and transportation services, and at the last was justly proud of the fact that under his guidance and jurisdiction the sick-rate and mortality of the troops had been greatly reduced. This was fully recognised and Blenkinsop, with his mission accomplished

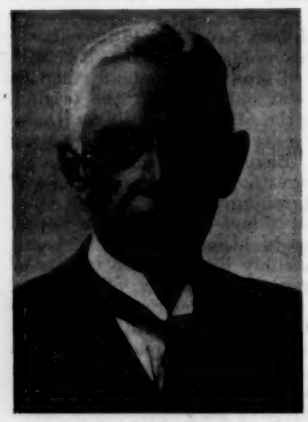
and his ambition satisfied, returned home to promotion at the Horse Guards as D.M.S. Eastern Command, and eventual retirement with a K.C.B. and the easier and less exacting rôle of a colonel commandant of the corps.

"In contemplation, one likes to recall the 'Blenky' of the time when his travelling days were o'er, with the repose that the lesser activities of a commandantship allowed giving him opportunity for intimate social contact with his brother officers at the headquarters mess, his home, and elsewhere. As he approached the sere and yellow leaf of life he mellowed with it, and gave the impression of one who communed with nature, and had thereby learnt the lessons reserved for those who seek its mysteries and unquestionably abide by its teachings. 'Blenky' always gave of his best, and we who remain are indubitably his debtors for a life devoted to the interests of his corps and his profession."

WILLOUGHBY MASON WILLOUGHBY, M.D. Camb., D.P.H.

MEDICAL OFFICER OF HEALTH FOR THE CITY OF LONDON

Dr. W. M. Willoughby, medical officer of health for the City of London, who died in St. Bartholomew's Hospital on Nov. 4th was born in Plymouth in 1875. He was educated at Plymouth College and University College, Bristol, whence he obtained a scholarship at Gonville and Caius College, Cambridge. He took honours in the natural sciences tripos in 1897, and choosing medicine as a career, studied at St. Bartholomew's Hospital and graduated M.B., B.Chir. Camb. in 1900. After a short period of general practice in a mining district of South Wales he entered, in 1901, the public health service, as a boarding medical officer on the staff of the Port of London Sanitary Authority. A year later he obtained the diploma in public health, and in 1904 proceeded to the M.D. degree, submitting a thesis on the Site of Pain in Visceral Disease from an Embryological Standpoint, which showed the scientific outlook that he always had.



DR. WILLOUGHBY

[Photograph by C. E. Dixon

In 1908 Willoughby was appointed medical officer in charge of the Port Sanitary Authority's isolation hospital at Denton, near Gravesend, and in 1914 he was made deputy M.O.H. of the Port. During this period he gained a wide experience in the diagnosis of small-pox and plague and in the prevention of the spread of these diseases from infected ships. A great variety of infectious diseases came under his care at the hospital, but it was probably the cases of enteric fever which interested him most. The hospital was rarely without at least one such case and in many instances the patients were critically ill when they were admitted, having had no skilled nursing on board ship. Willoughby devoted the closest personal attention to these cases and was remarkably successful in his treatment. Also the first special regulations for the prevention of the importation of unsound food were issued in 1908; there was much to be done in the early days and Willoughby would himself take a hand in the practical work of meat inspection.

On the death of Dr. Herbert Williams in 1916 he was appointed M.O.H. of the Port of London, and he took command at a time when, owing to war conditions, the responsibilities were unusually heavy, but his years of experience enabled him to deal successfully with every danger and difficulty and an equable temperament helped him through a very strenuous period. In 1928 he succeeded the late Dr. Howarth as M.O.H. of the City of London. In a number of ways the experience he had gained in the Port was useful in the City, for he had not confined his studies to port sanitary questions. He had taken a keen interest in tuberculosis, venereal diseases, eugenics, and nutrition, and he brought to all his public health problems a keen intellect and a trained scientific mind.

His death is mourned by his widow; his only son who, as an assistant medical officer in the Port of London, is following in his father's footsteps; the Corporation of the City of London who held him in high esteem; his staff, who were devoted to him; and his colleagues in the public health service who admired and respected him.

"C. F. W." writes: "Willoughby was such a quiet, unassuming man that, despite the important position he held, only those who had the privilege of close association with him had the opportunity to appreciate his learning, his wisdom, and his generosity in thought, word, and deed. By inclination and training he was a scientist. In his early days he was devoted to biology, but much work with the microscope began to affect his eyes and he took up geology to which, in his later years, he devoted most of his leisure and which he thought would make an ideal hobby when he retired, providing him with fascinating occupation both out of doors and at home. Whenever he went away, either on a holiday or to attend some public health congress, he would take the opportunity to investigate the geology of the district and would return with his car loaded with 'rocks' which he had collected for study at home. But he never forgot his biology and it influenced his outlook on many public health problems. He held that there was a tendency to concentrate on the individual to the neglect of the race. Though he deplored this, he refrained from the public expression of his views because he realised the demands of humanitarianism. He was keenly interested in eugenics and in recent years he followed closely work on nutrition, which he felt was fundamental in the study of preventive medicine.

"Willoughby carried out all his public health duties conscientiously, but he was critical of anything that was not scientifically sound in conception. He did not like palliatives and had a contempt for mere expediency, nor would he pay lip service to 'stunts.' If, however, he had occasion to express unorthodox views he was most careful not to tread on public or private susceptibilities. He had a fine sense of the use of words and would employ them, not in their colloquial meaning, but with an appreciation of their etymology; his writings therefore needed close attention which was, however, always well repaid. He had a strongly developed

artistic sense and at one time he did a good deal of painting in water colours. He had a lively sense of humour and was invariably courteous and considerate towards others; even during his last illness, which he endured with unflinching courage and uncomplaining patience, he would crack a joke with his visitors and apologise to his nurses for 'being so much trouble.' He will be sadly missed by his many friends, but nowhere will his loss be more keenly felt than in the Guildhall of the City of London."

FRANK CAMPBELL SMITH, M.R.C.S.

Dr. Campbell Smith died on Oct. 27th, aged 38. Since qualifying in 1927 he had spent most of his time at the London Hospital where as Freedom research fellow he explored various parts of the borderland between physical chemistry and medicine.

We owe the following note to one of his collaborators in this work: "A meeting with Campbell Smith was never confined to the common-place. However trivial the subject there was always a direct personal approach which made the recipient feel that for the moment at least there were not just two tongues wagging but two people standing above the occasion. He was a barbarian refusing to accept the civilised conventions; essentially on the look-out, on the attack, in quest, and finding these instincts continually baulked by the defensive purpose of these conventions. Yet no one could be kinder, more gentle, or considerate in circumstances requiring these. This directness and clear-sightedness was characteristic of his work also. His virtue as a man of research was his ability to know with something more than his intellect the character of the problem that engaged him. Formal considerations had only secondary importance. As a student in his B.Sc. practical examination he pointed out to the examiners that a question they had set was impossible to answer. They finally had to agree, told him he might go, and gave him a "first." Some might have worked through it to show the examiners their error; others might have been puzzled at their curious results; but to 'Budge' Smith what was the use of showing that something was wrong when he knew it was wrong?—in an examination. He always had a right sense of the occasion. He was a pioneer in ultra-violet absorption spectrography which, in the hands of others, had been much abused and brought to discredit. He realised its power and its limitations and never made the mistake of coming to unwarranted conclusions. It is now a well-established method.

"In later years he seemed to feel more and more the restricted attitude of approach to science and its interpretations. It may have been because of this that he abandoned research and went into general practice in the East of London. He was robbed of the opportunity of finding himself and others in his new endeavour."

FRANCIS JOSEPH SADLER, M.D. Oxon., D.P.H.

THE death occurred on Saturday last, Nov. 7th, in the Barnsley Beckett Hospital, of Dr. Francis Joseph Sadler, and by the event a sequence of more than a century of medical work in Barnsley is closed. Dr. Sadler's grandfather, Michael Thomas Sadler, was a well-known surgeon and social reformer. His father, also Michael Thomas Sadler, was a medical practitioner in Barnsley, a prominent and successful worker in the interests of secondary education in the town, and one of the founders of the Barnsley Beckett Hospital. Francis Sadler was educated at Rugby and Wadham College, Oxford. From Oxford he went for his medical training to St. Bartholomew's Hospital and graduated as M.B., B.Ch. in 1894, taking the diploma of D.P.H. in the following year and later proceeding to the M.D. degree. After holding certain resident appointments he went into practice at Barnsley, and, like his father and grandfather before him, became a member of the staff of the Barnsley Beckett Hospital. For many years he was in partnership with Dr. J. H. Fryer. He was appointed medical officer of health and school medical officer for Barnsley and, at the time of his death, was M.O.H. for Barnsley rural district. He was also physician to the Kendray Hospital for Infectious Diseases, a certifying factory surgeon, and had filled the office of president of the Sheffield Medical and Chirurgical Society. True to the family tradition, he was deeply interested not only in the general health but in the social betterment of the community among whom he worked. He was president of the Lady Harriet Wentworth Charity, a body which represents the charity organisation of Barnsley, and was trustee to the Cooper Art Gallery at Barnsley, for he had a great belief in the good influence which a study of art might have on an industrial population. To this gallery his brother, Sir Michael Sadler, late master of University College, Oxford, recently presented a collection of English drawings. Dr. Sadler's athletic enthusiasm was shown by his interest in the Barnsley Football Club, of which he was president; such interest in athletics was lifelong with him, for at Rugby he had been a well-known boy runner, and later he represented Oxford as a three-miler.

Dr. Sadler was 69 years of age at the time of his death, which followed on a brief illness. He married Miss Helena Tause who predeceased him, and is survived by an only daughter.

INTERNATIONAL CONTROL OF DANGEROUS DRUGS

FURTHER progress has been made towards effective international action for the suppression of illicit traffic in dangerous narcotic drugs. At the last meeting of the Council of the League of Nations a Convention and Final Act, drafted by the conference which sat at Geneva last June, was reported by M. de Vasconcellos, the representative of Portugal. He pointed out that the penalties inflicted for offences in connexion with the illicit traffic were not sufficiently severe. He expressed the hope that the Convention, which prescribed much heavier penalties, would be signed and ratified as soon as possible by all participating States. Unfortunately it had become known that the United States of America took exception to the Convention because no provision had been included in it for the criminal prosecution of habitual opium-smokers. Apparently while there was unanimity in the desire to arrive at total abolition of opium-smoking there was a large majority averse from the immediate application of such policy. It was apprehended that such drastic measures would lead to an extension of the illicit traffic.

To the Permanent Central Opium Board has been added a representative of Uruguay, M. Abelardo Saenz, and the hope was expressed that this appointment would promote that fuller coöperation between the Board and the Latin-American countries which was much to be desired. The Council of the League renewed the appointment of Mr. L. A. Lyall (British) and Dr. de Myttenaere (Belgian) as assessors to the Advisory Committee on Dangerous Drugs.

PARLIAMENTARY INTELLIGENCE

NATIONAL PHYSIQUE

THE debate on the Address was resumed in the House of Commons on Nov. 4th and 6th.

Mr. A. V. ALEXANDER said the Labour Opposition welcomed the Government's recognition that there was a serious deterioration in the physical standard of the people. There was no better evidence of this than the Secretary of State's action in asking for recruits of a lower physical standard than had hitherto been required. If they looked at the actual facts with regard to nutrition there should be no need to urge on the Government the necessity for action. In a recent report of the League of Nations it was said that "in the United Kingdom the diet of at least 50 per cent. of the population falls short of the desirable standard."

That was not a small proportion, and the report went on:

"It is estimated that to raise the consumption of this low income half of the population merely to the level of the next group would require an increase of 16 per cent. in the amount of milk consumed, 15 per cent. in that of butter, 18 per cent. in eggs, 12 per cent. in meat, as well as a 25 per cent. increase of expenditure on fruit and vegetable. Even then the diet would leave room for considerable improvement."

Dealing with economic considerations the report said:

"The reduction in retail prices of food has been accompanied by a still greater reduction in income of many classes of the population, and this in turn has led to serious malnutrition amongst certain classes."

Again, dealing with some of the more deadly forms of disease from which our working class suffered to-day, the report said:

"Here again, therefore, it is possible that an increase in the consumption of protective food, especially by poor people, would reduce the incidence and death-rate due to this disease. . . . In general, it would seem that, at the very lowest level of income, workers concentrate their dietaries on bread and cereals; with the first increases above this level, more cheap fats and meats are consumed; with further increases in income, butter is introduced into the diet.

If the Government, he concluded, were not prepared to deal with the economic purchasing power of the people, even inside the present social system, they would not be able to make any rapid progress in improving the physical condition of the people.

PHYSICAL TRAINING

Sir FRANCIS ACLAND said it was a delightful thing to watch the new type of physical training which was being given in our schools, and to realise how well they were providing on the whole for playing fields as well as other methods of physical training. But surely it must do harm rather than good to give more exercise to those whose feelings of hunger it would only intensify, or to those who were being so improperly fed that exercise quickly induced fatigue. The most obvious and urgent matter was a better use of milk in schools. He was delighted to see the prominence given in the King's Speech to the campaign for physical efficiency, but unless it was accompanied by something on big lines in the way of better nutrition it would not get the general support which it deserved. He was also glad of the phrase about legislation to provide medical care for young persons who had left school and entered employment. A boy leaving school at 14 and entering directly into employment could not get help from his approved society for dental service until he was 18½. That would not do. Our school dental service was one of the most valuable health services in connexion with education, and in the best counties it was becoming almost a rule that children should leave school with their teeth in good condition. Then came this gap during a most critical period of 4½ years, when the child was almost passing into the adult stage, and during that time he could get no help for his teeth from the approved societies. There was therefore a tendency for these lads to neglect their teeth, and by 18½ they were so bad that they allowed them to get worse, until perhaps some years later all of them had to come out. By that time real physical harm had been done to the health of the young person. He felt sure that the Minister of Health would bear that point in mind in the measures he proposed to take.

CONFLICTING VIEWS

Mr. GEORGE GRIFFITHS said that at the end of last year 8376 miners in this country were suffering from nystagmus; he regretted there was no reference to measures for dealing with it. On the question of nutrition he quoted the results of a door-to-door canvas of 1000 families, many of whom were found to be living on less than 2*s*. per head per week, or 1½*d*. per meal.

Examination of the family budget showed that 14 of these families were living on less than 2*s*. per head per week, 52 below 2*s*. 6*d*. per head, 130 below 3*s*., 102 below 3*s*. 6*d*., and 88 below 4*s*. Therefore out of 1000 families 386 were spending less than 4*s*. per head per week.

Before they gave the people dumb-bells the Government should see that the people got sufficient food. There were thousands of children who had hardly sufficient strength to break the skin of a rice pudding.

Mr. WALTER ELLIOT, Secretary of State for Scotland, said the Government believed that the system in this country had done as much to improve the conditions of the people and as rapidly as any other régime which could be mentioned. It was suggested that our people should have more food and a better standard of living. Of course, but the Government could quote the remarkable fact that when the Labour Government were in office one man lost his job every minute, day and night, during the whole of that time, and they worked up to two men a minute towards the end of the period, whereas during the past 12 months of the present Government one man every minute had got a new job in this country, and 488,000 of those people were still holding their jobs at the end of the year. The Government considered that those people were more likely to be able to purchase the protective foods which Mr. Alexander desired them to have than if they were unemployed. That was proved by the fact that the consumption of those very foods had gone up enormously in recent years. Since 1930 the people of this country were eating 660,000 cwt. more beef and veal, 860,000 cwt. more of mutton and lamb, 3,000,000 cwt. more of sugar, and nearly 3,000,000 cwt. more of butter. They were enabled to buy those things because more of them were in employment. That was the general policy of the Government towards all these questions.

Mr. T. JOHNSTON said he would be disappointed if what they got in legislation as a result of the promises in the King's Speech was only something in the nature of physical drill for Army service purposes. Lord Horder had said it was no good telling people to drink more milk if they could not get it. Every investigator—the League of Nations, Sir John Orr, and the rest—proved that anything from 10 per cent. upwards of our population was living below the British Medical Association's minimum standard. Ninety-six per cent. of school-children had rotten teeth, and every medical authority told them that was due to the absence of vitamin A, because of the absence of the necessary milk. Anæmia, weakness, and invalidity were testified to by every authority of every class and every political colour. They asked

that in a land capable of producing more food and more wealth the primary consideration should be consumption, human need, and that if necessary they should increase the money tokens to meet the increased productivity of wealth.

Sir FRANCIS FREMANTLE remarked that what Mr. Johnston had said about the lack of fitness in the population had aroused great sympathy in the hearts of hon. Members. As a medical officer of health he was bound to admit lack of fitness in the population at the present time. But dental caries was also prevalent in the well-to-do schools where there was no lack of vitamins in the diet; one of its main causes was the amount of sugar and sweets consumed. Many people, quite apart from politics, spoke of a lack of nutrition of the people, as though Providence made all men ideal and perfect. It was quite right to show what a large hiatus there was between existing conditions and the perfection at which they aimed, but to imagine that that hiatus was due to the iniquities of the Government, or the medical profession, or of anybody else, was absurd. At the same time the position was, without doubt, very serious when they found such a very large number of defects in those who came up for any particular Service, and in particular for the national defence. A large amount of ill-health to-day was caused by over-eating, or by bad eating and the bad choice of food. Hunger to a certain extent was a good thing. The medical profession looking into these matters were finding it difficult to generalise. He was much afraid of money being poured out in consequence of agitation as though it was going to solve the question. Because of the State provision less was provided by bad or careless parents at home. The one thing to do was to bring the people back to a state where they had employment on proper lines in sufficiency so as to be able to buy the things they required. The fitness of the people depended very largely on the fitness of the children in the school, and that depended very largely on the teachers understanding how to administer it. A great deal of emphasis required to be laid on the teaching of physiology as a separate branch. The work of medical officers of health brought them into touch with healthy life; it was their job to keep people healthy; and that side of the profession needed to be encouraged and strengthened, above all in the medical schools, by turning out doctors who thought of health rather than of disease as their main function.

AN OPPOSITION AMENDMENT

Mr. A. GREENWOOD, on behalf of the Labour Opposition, moved the following amendment:

"But regret that your Majesty's advisers fail to recognise that under the existing capitalist system the present improvement in trade and industry, largely stimulated by the world race in armaments, can only be temporary; that, while making tardy acknowledgment of the deterioration in the physical fitness of the nation, due mainly to long-continued unemployment, low wages, and consequent malnutrition, they are continuing to enforce a means test which intensifies this deterioration and to neglect the problems of those areas which have been most severely affected; and that they have no proposals for making the fundamental changes in the basis of society which are necessary in order to create a Socialist commonwealth in which the full resources of the nation shall be utilised for the benefit of the community as a whole."

This amendment, he said, was put down as a challenge to the outworn theories on which the policy of the present Government was based. The depressed areas were really outward and visible signs of a great, fundamental, deep-seated disorder in the economic system. There appeared to be a curious reluctance on the part of the Government and its supporters to admit that there was any such thing as malnutrition. If scientists worked out the kind of diet necessary to attain physical efficiency, and people had not the money to buy the quantity of food, those people must suffer sooner or later. It must be plain that it was not a case of spending the money badly, or of bad cooking; it was the simple stark fact that there was not enough money. It was curious that this new-found zeal for physical efficiency should coincide with the Government's rearmament programme. Open spaces, exercises, and gymnasiums came a very long way after good food, good clothing, and good homes. There would be no improvement in the national physique by exercising distorted and stunted bodies. Malnutrition existed in this country, which was still the richest in the world. Millions of people fell below Sir John Orr's standard, not because of the poverty of the nation but because of the way in which the wealth produced was distributed. Unless they had increased public control they could not use the nation's resources to the best advantage.

MINISTER OF HEALTH'S REPLY

Sir KINGSLEY WOOD, Minister of Health, said that the whole implication of the amendment, and the statements in it, could only be described as grotesque and absurd. The amendment alleged deterioration, not in certain sections of the community or in some part or other of the country, but of the physical condition of the country a a whole. That was quite untrue. We were not a C3 nation; the reverse was true. Viewed over any period of time which enabled just comparisons to be made, our national health was improving, not merely steadily, but remarkably.

The recent speech of the Chancellor of the Exchequer at Margate pointed to one of the most important ways of achieving improvement by urging the vital necessity in the interests of the better health and happiness of the nation of taking further national concerted action in increasing individual fitness and general physical development and education. That speech had met with an enthusiastic response, especially from the younger generation, the voluntary organisations, and the men and women who were engaged in social and medical work. One of the best signs of the times was the growing appreciation of the value to the individual citizen of right ways of living, eating, clothing himself, and particularly of the increased health and fitness that could be obtained for both body and mind from physical exercise and education, such as field games, swimming, hiking, and more life in the open air. We were living much longer than our forefathers, and we had to see to it that these increased years were worth living by the promotion of health both in spirit and in body.

The problem of nutrition was playing, and must play, an increasingly important part in our health plans and policy. The questions of what was sound nourishment, what constituted a well-balanced diet, and how we were to apply in practice our modern knowledge of these matters, were engaging the attention of many experts throughout the world. We had our own expert Advisory Committee dealing with this matter, and it was probably one of the best committees on nutrition to be found in any country. Its members included such men as Sir John Orr, Dr. E. Mellanby, Prof. Gowland Hopkins, and Prof. E. P. Cathcart, and every effort had been made to obtain the best advice possible. This committee was going on steadily with its work, particularly in relation to enquiries into diet and nutrition. A further step has just been taken. The collection of family budgets, which was part of the Ministry of Labour's investigation of the cost of living, would provide much useful information about diet. The Advisory Committee desired a number of quantitative dietary surveys to be carried out, the cost of which would be borne by the Ministry. The milk in schools scheme was in operation in schools containing over 90 per cent. of the elementary school population, and in addition large quantities of liquid or dried milk were being distributed free or at cheap rates to maternity and child welfare centres. It was

extraordinary that rather less than half the children were at present taking advantage of the milk scheme, and it was not a matter of poverty. An examination was now being made as to the best means of increasing the consumption of milk under the schemes now in operation. There was no medical divergence of view on the value of milk, and when he had received the report of the Milk Reorganisation Commission the question would be considered of how to extend the scope of the milk scheme.

Malnutrition, said Sir Kingsley, was a word which was much used and much abused. One of the best tests was to look at the conditions of the children. The report of the London County Council's school medical officer for the past year contained the following statement:—

"On a careful clinical assessment of the state of the children's nutrition in the routine medical inspection in the elementary schools during 1935, 76·9 per cent. of the children fell into Class 2 (nutrition normal), a further 17·4 per cent. were classed 1 (nutrition exceedingly good), making 94·3 per cent. whose nutrition was satisfactory. The remaining 5·7 per cent., whose nutrition was adjudged unsatisfactory, were mainly in Class 3, nutrition subnormal (5·6 per cent.), and only 152 (0·08 per cent.) children out of 189,203 examined fell into Class 4 ('definite pathological nutrition')."

Representative school doctors, it was stated in this report, who have been interrogated with regard to the returns are of opinion that there has been no deterioration in the children's general condition of nutrition.

It was a matter of surprise that Mr. Greenwood had not given testimony that day to the remarkable improvement in employment and wages in this country, for the aggregate net weekly increase in rates of wages was greater in 1935 than in any year since 1924.

The Debate in the Lords

In the House of Lords on Nov. 10th Lord Mount Temple asked the Government what steps they proposed to take to improve the physical fitness of the youth of the country.

Lord DAWSON said that it would be wrong to say that the nation was deteriorating, but there were the seeds of deterioration in our midst. Definite warnings had been ignored, and consequently the question had become urgent. In our present civilisation the death of the unfit was being prevented, but we had not planned any active adequate substitute. There was only one adequate substitute which was to promote fitness on the one hand, and to see to it that we took care of the inherently unfit, and prevented them from vitiating the race. We had to plan actively for a fit race, and that must actuate all our policy. Why should we not use measures to prevent the birth of children who were not wanted, who were a misery to themselves, and damaging to the race? The medical profession should be exempted from the terms of the ancient law against maiming, and its powers of preventive treatment extended to such cases where it was asked, and where it was right to proceed.

Lord HORDER said he spoke in supplement to and not in substitution of Lord Dawson's ideal. As one who was anxious to avoid delay, he said, "Look after the accessibility of food and nutrition will look after itself." The question of food and distribution was not a matter for one Ministry but several, and he would like to see coöperation in this respect between the Ministries of Health, Agriculture, and Transport, and the Board of Trade.

Earl DE LA WARR, Parliamentary Secretary for the Colonies, said that the Government intended to mobilise voluntary effort, plus that of the local authorities, and help and encourage them to give greater facilities for promoting public health. The basis of the scheme would rest on local authorities and existing voluntary organisations.

NOTES ON CURRENT TOPICS

Voluntary Euthanasia

IN the House of Lords on Nov. 4th Lord PONSONBY presented the Voluntary Euthanasia (Legislation) Bill, to regularise in certain conditions the administration of euthanasia to persons desiring it who were suffering from illness of a fatal and incurable character involving severe pain.

The Bill was read a first time.

New Bills Presented

In the House of Commons on Nov. 6th the following Bills were presented by private Members:—

Workmen's Compensation.—Bill to amend the law relating to workmen's compensation.—Mr. Mainwaring.

Marriage.—Bill to amend the law relating to marriage and divorce.—Mr. De la Bère.

Annual Holiday.—Bill to make provision for an annual holiday for employed persons.—Mr. Rowson.

Offices Regulation.—Bill to regulate offices and the employment of young persons therein.—Mr. Ammon.

Deaf Children (School Attendance).—Bill to lower the age of compulsory school attendance in the case of deaf children from seven years to five years.—Mr. Duckworth.

Medical Practitioners' Communications (Privilege).—Bill to provide that certain communications between medical practitioners and their patients shall be privileged from disclosure in evidence in courts of law.—Sir E. Graham-Little.

Coal Mines (Employment of Boys).—Bill to amend the law relating to the employment of boys underground in coal-mines.—Mr. C. Taylor.

Registration and Regulation of Osteopaths.—Bill to regulate the practice of osteopathy and to prescribe the qualifications of osteopathic practitioners.—Vice-Admiral Taylor.

Prohibition of Vivisection on Dogs (Scotland).—Bill to provide for the abolition of vivisection upon dogs.—Mr. T. Henderson.

Employers' Liability.—Bill to amend the law relating to the liability of employers to their workmen for injuries caused by the negligence of fellow workmen.—Mr. Potts.

Scottish Midwives Bill

In the House of Commons on Nov. 10th Mr. ELLIOT, Secretary of State for Scotland, presented the Maternity Services (Scotland) Bill to make further provision with respect to maternity services in Scotland, to amend the Midwives (Scotland) Act, 1915, and to provide for the combination of local authorities for certain purposes under the Notification of Births (Extension) Act, 1915.—The Bill was read a first time.

QUESTION TIME

THURSDAY, NOV. 5TH

Bronchial Troubles among Textile Workers

Mr. RHYS DAVIES asked the Home Secretary if it was the intention to set up a committee to inquire and report on bronchial troubles among textile workers consequent upon the prevalence of dust in card rooms, with a view to arriving at a scheme whereby compensation might be paid in these cases; and when it was proposed to set up such a committee and the probable date it would commence to function.—Mr. GEOFFREY LLOYD replied: As previously explained, the Workmen's Compensation Act does not appear to be applicable owing to the difficulty of distinguishing the cases in which the illness is due to the dust, but my right hon. friend is considering the setting up of a committee to explore the question whether a workable scheme can be devised for providing some compensation for cardroom and certain other workers disabled by respiratory illness as indicated in the report of the Committee on Dust in Cardrooms, and he hopes to be able to make an announcement at a very early date.

Medical Opinions and Workmen's Compensation

Captain STRICKLAND asked the Home Secretary whether he was aware that in cases of poisoning resultant on

industrial occupation the claimant for compensation was required, before undergoing official medical examination, to indicate in medical terms on an official form the exact type of poisoning from which he claimed to be suffering and for which he desired to be examined; and whether he would consider such alteration of procedure as would ensure that claimants should receive the benefit of medical opinion before having to fill in the form in such technical terms.—Mr. GEOFFREY LLOYD replied: A workman who thinks he is suffering from one of the scheduled industrial diseases can, and generally does, consult his own medical adviser, and in a case of difficulty he can apply for assistance to his approved society who are in a position to obtain a further medical opinion. I have no information before me at present to suggest that these arrangements are not sufficient.

Supervision of Nursing-homes

Dr. LEECH asked the Minister of Health whether he was in collaboration with the London County Council or with the metropolitan borough councils, taking suitable steps to ensure that the furnishings of rooms in private nursing-homes in the metropolitan area were always sterilised after the rooms had been vacated by a patient.—Sir KINGSLEY WOOD replied: The supervision of nursing homes in London is the responsibility of the London County Council. I will communicate with them on this matter and inform my hon. friend of the result.

Sir FRANCIS FREMANTLE asked the Minister of Health if he was aware of nursing-homes still unregistered under the 1927 Act; and what steps he was taking to ensure the closure of unregistered and the proper conduct of registered nursing-homes.—Sir KINGSLEY WOOD replied: I will send my hon. friend a copy of the circular which I have recently issued to the local supervising authorites on this subject.

Sir F. FREMANTLE: Will action be taken on the side of the local authority to remedy the standing anomalies that are prevalent, there being thousands of nursing-homes that are unregistered, and nursing-homes that are registered and not properly supervised?—Sir K. WOOD: The answer is that action will rest with the authorities concerned.

Housing Redevelopment Schemes

Mr. DAVID ADAMS asked the Minister of Health if he would give the names of any local authorities in England and Wales which had passed resolutions declaring areas to be proposed redevelopment areas under the provisions of Section 13 of the Housing Act, 1935; and whether any schemes for such areas were now going forward.—Sir KINGSLEY WOOD replied: Resolutions declaring areas to be proposed redevelopment areas have been passed by the borough councils of Liverpool, Norwich, Lowestoft, Bangor, and Croydon, and by the urban district council of Brierley Hill. Inquiries have been held in the case of Liverpool and Norwich, and the reports of the inspectors are under consideration. In the other cases procedure has not yet reached the stage at which an inquiry can be directed.

Mr. HERBERT WILLIAMS asked the Minister of Health if he could furnish an estimate of the number of houses in England and Wales on March 31st each year since the date of the last census.—Sir KINGSLEY WOOD replied: The number of structurally separate dwellings in England and Wales at the census of 1931 was 9,400,000. Table II. of the half-yearly publication on Housing shows the number of houses built in each half-year since the census. I have no complete information about the number of houses demolished during this period.

Special Investigation into Maternal Mortality

Sir FRANCIS FREMANTLE asked the Minister of Health if he had received the report of the Committee on Areas of High Maternal Mortality; and if he intended to publish it.—Sir KINGSLEY WOOD replied: I have not yet received this report, but I am hoping that it will be completed by the end of the year. I have already promised that the report will be made available to the House, and steps will be taken to give it publicity.

Housing in Scotland

Mr. HERBERT WILLIAMS asked the Secretary of State for Scotland if he could furnish an estimate of the number of houses in Scotland on March 31st each year since the date of the last census.—Mr. WEDDERBURN replied: The number of occupied private houses in Scotland at March 31st in each of the years 1932 to 1936 is estimated at: 1,155,000, 1,169,000, 1,186,000, 1,196,000, and 1,206,000 respectively.

MONDAY, NOV. 9TH

Compensation for Silicosis and Anthracosis

Mr. JAMES GRIFFITHS asked the Minister of Health the number of workmen certified to be disabled by silicosis or anthracosis who were in receipt of relief from the public assistance committees in the counties of Carmarthen, Brecon, Glamorgan, and Monmouth on account of their failure to secure compensation under the existing silicosis schemes.—Sir KINGSLEY WOOD replied: I regret that the records in my department do not enable this information to be supplied.

Physical Training of Women and Girls

Mr. DENVILLE asked the President of the Board of Education if he had considered the resolution which was passed by the Women's League of Health and Beauty, relative to the physical training of women and girls; and had he any statement to make.—Mr. GEOFFREY SHAKESPEARE, Parliamentary Secretary to the Board of Education, replied: My right hon. friend is much in sympathy with the work of this organisation, but he is not at present in a position to make any statement on the matter.

Health Insurance: Extension of Medical Benefits

Mr. ROSTRON DUCKWORTH asked the Minister of Health the additional cost of medical benefits under the National Health Insurance Acts if these benefits were extended to include pathological diagnosis, operations, and electrical, ophthalmic, hydropathic, radiant heat, massage, and convalescent hospital treatment; and whether he would take steps for this cost to be defrayed by any of the approved societies.—Sir KINGSLEY WOOD replied: The cost of providing all insured persons with the services detailed by my hon. friend as part of medical benefit under the National Health Insurance Acts would depend on the scope and conditions of the services, and I regret that I am unable to give any estimate. I would add that some of these services are already included within the scope of the additional benefits which approved societies having a disposable surplus may provide for their members, and that societies are in fact devoting large sums annually towards the cost of such services.

MARGARET STREET HOSPITAL FOR DISEASES OF THE CHEST.—On Nov. 4th the Marchioness of Titchfield opened a new X ray clinic at this hospital in Margaret-street, Cavendish-square, London. Dr. F. Hernaman-Johnson, the radiologist in charge, gave an address in which he spoke of the necessity for a specialist hospital to be equipped for general radiography and radiotherapy. After describing the favourable results obtained in the treatment of asthma and the help given to patients with chest diseases who happened also to have rheumatism, he concluded with a reference to the arrangements now made for private patients. The class of patient provided for, he said, had maximum incomes of £400–£500 a year, and their average income was much lower. "These patients pay for diagnostic X ray work on a scale identical with that in force at King's College Hospital. The provision of X ray treatment for small private fees is, however, I believe a special feature of this clinic. These fees are about one-quarter of those usually charged in the West End. Patients of this type have hitherto had no alternative between crippling themselves financially or becoming ordinary hospital patients."

The Cavendish-square institution is for out-patients only. In-patients are treated at the Fairlight Sanatorium, Hastings.

MEDICAL NEWS

University of Oxford

Dr. Simon Flexner, director of the Rockefeller Institute for Medical Research, has been appointed to the George Eastman visiting professorship for 1937–39.

Royal College of Surgeons of Edinburgh

At recent examinations of the College the following candidates were successful :—

L.D.S. R.C.S. EDIN.

M. A. Macdonald (with honours), W. G. Carson, G. O. Horne, F. S. Frank, Herbert Falkenstein, Reuben Green, W. E. Headlam, Livingston Rae, J. N. R. Thomson, Helmut Lewinsky, Ernst Stiebel, Dora Shirlaw, J. J. Hodson, W. G. Clarkson, E. B. Mackenzie, S. A. Nicholson, and F. E. Adams.

J. A. Hudson and A. E. Duvall have passed the examination for the higher dental diploma.

Royal Faculty of Physicians and Surgeons of Glasgow

At the annual meeting of the faculty on Nov. 2nd the following were elected office-bearers for the ensuing year : president, Prof. Archibald Young ; visitor, Dr. John Henderson ; hon. treasurer, Mr. J. H. MacDonald ; hon. librarian, Dr. W. R. Snodgrass ; representative to the General Medical Council, Mr. G. H. Edington ; other councillors, Dr. Carstairs Douglas, Mr. A. G. Faulds, Mr. John Gracie, Mr. A. J. Hutton, Dr. H. L. G. Leask, Dr. J. Souttar McKendrick, Dr. R. Barclay Ness, Mr. William J. Richard, Mr. John Rowan, and Mr. J. Forbes Webster.

Dr. Ee Seng Lee (Dalmellington) was admitted to the fellowship.

Scottish Conjoint Board

At recent examinations of the Royal Colleges of Physicians and Surgeons of Edinburgh, and the Royal Faculty of Physicians and Surgeons of Glasgow, the following candidates were successful :—

L.R.C.P., L.R.C.S., AND L.R.F.P. & S.

Vincent Bellafiore, W. H. Berkman, G. H. Berry, L. L. Bernstein, Morris Binder, John Boyes, Alfred Dreifuss, Harry Einhorn, Denis Fabian, Minnie Faine, Andrew Forgacs, Leo Fred, Matthew Freed, I. I. Fuchs, Bencion Gilbowski, G. N. Girgis, Irving Gitzelter, Arthur Goldberg, H. I. Goldberg, K. G. O. Gordon, J. D. Gow, Wladimer Gurewitsch, R. R. Hair, David Hardy, N. H. Hass, M. L. Herman, Gunaratnam Jeremiah, Harry Kane, M. L. Kenig, W. P. Kelly, Walter King, D. P. Lewis-Badgett, Hilma C. C. M. Ljungfaldt, Milton Mamula, D. N. Markley, D. A. Martin, William Mears, Murray Meiselman, Max Michel, Julius Pomeranze, Sigrid M. Pribram, M. M. Ramadan, Nicholas Reiter, Herbert Rosenfeld, Caesar Rummelsburg, Herman Samuels, Jack Sang, Hans Schaefer, David Schreiber, P. B. E. Senewaratne, R. L. Siegel, A. M. L. Smith, A. F. Snyder, Orpha M. Speicher, Hans Ucko, Harold Warren, M. B. D. Welland, Benjamin Wiesenfeld, S. H. Wharton, H. H. Winsterstein-Gillespie, Rotoli Xaba, and C. H. Yeo.

On Oct. 31st a ceremonial presentation of dilpomas to the licentiates was held for the first time in Scotland at the Royal College of Surgeons, Edinburgh, at which Prof. W. T. Ritchie, president of the College, and Prof. Archibald Young, president of the Royal Faculty of Physicians and Surgeons, Glasgow, were present.

Royal Hospital, Wolverhampton

Thirty-four beds are to be added to the accommodation of this institution. A detached building of four storeys is to be built on the southern side of the hospital, which will be able to take a further 50 beds in the future. In the basement there is to be a swimming pool, and a new ward for eight cots and five isolation rooms is to be provided.

Port Regis Preparatory School

At this preparatory school two scholarships of £100 each are annually awarded to the sons of medical men. The school is at Broadstairs, Kent, and the scholarships were recently founded by Sir Milsom Rees. The next examination will be held on March 5th, 1937. Candidates must be under 9 years of age at the time of competing, and the scholarships are normally tenable till the holder leaves the school. The holders will be selected at an interview in London from among those boys who have done best in some simple examination conducted in or near their homes. Applications must be addressed to the head master, Port Regis School, Broadstairs, from whom full particulars may be obtained. The applications must be made not later than Feb. 20th, 1937.

New Tuberculosis Hospital, Cardiff

The Duke of Kent on Nov. 6th opened the new tuberculosis hospital of the Welsh Memorial Association at Sully.

Royal Society

The following is a list of those recommended by the president and council as office-bearers for the coming year : Sir William Bragg, O.M., president ; Sir Henry Lyons, treasurer ; Sir Frank Smith and Prof. A. V. Hill, secretaries ; and Sir Albert Seward, foreign secretary. The 16 fellows nominated for the council include Prof. C. R. Harington, Prof. David Keilin, Prof. W. W. C. Topley, M.D., and Mr. Wilfred Trotter, M.S.

King's College Hospital

The annual dinner of past and present students of this hospital was held at the May Fair Hotel on Oct. 24th. Mr. H. A. T. Fairbank was in the chair, and proposed the health of the Hospital and Medical School, which was responded to by the dean, Dr. J. A. Drake. The chairman's health was proposed by Prof. G. F. Still.

Victoria Cottage Hospital, Barnet

The Princess Royal has consented to open this hospital, which has been closed for extensions, early in 1937. The hospital was founded in 1887 to commemorate the Jubilee of Queen Victoria, to provide voluntary hospital facilities for the districts of Barnet, East Barnet, Cockfosters, Hadley Wood, South Mimms, Arkley, and Totteridge. The population is now estimated to be over 50,000, and it became imperative to enlarge the hospital by providing a separate staff hostel, a children's ward, and additional wards. The extensions will cost about £20,000, of which £12,000 has already been collected.

Edinburgh Royal Infirmary : New Orthopædic Department

Ward 2 of Edinburgh Royal Infirmary has been converted into a department for the treatment of orthopædic cases. Sir Thomas Whitson, chairman of the board of managers, who opened the ward last week, emphasised the need for the coördination of the hospital services in the district. He expressed the hope that the opening of the ward was but a beginning in the development of a new department which would serve the south-eastern area of Scotland. Hitherto all accident cases have been admitted into the general surgical wards in Edinburgh, but in view of the need for special after-care it is considered that cases of fracture will be more satisfactorily dealt with in a special department.

A Gift from Nepal

On Oct. 26th Lady Sybil Smith opened at the Wingfield-Morris Orthopædic Hospital, Oxford, a ward which is the gift of Lieut.-General Krishna Shumshere Jung, the Nepalese Minister, and his wife. The ward, which is for the treatment of infantile paralysis, has been given as a mark of appreciation of the work of Mr. G. R. Girdlestone, hon. surgeon to the hospital, who went out to India to attend a member of the family.

Population Investigation Committee

Under the chairmanship of Prof. A. M. Carr-Saunders, whose book on "World Population" we reviewed on Sept. 12th, a committee has been appointed to examine the situation created by the decline of the birth-rate in this country and the circumstances that have led to it. The members are :—

Mr. Eardley Holland, F.R.C.P., representing the British College of Obstetricians ; Dr. L. S. Penrose, representing the Medical Research Council ; Mr. H. D. Henderson, representing the Royal Economic Society ; Dr. Stella Churchill, representing the Society of Medical Officers of Health ; Sir Charles Close, F.R.S., representing the British Population Society ; Lord Horder, F.R.C.P., Mrs. E. M. Hubback, and Prof. Julian Huxley, representing the Eugenics Society ; Mr. Colin Clark ; Prof. L. T. Hogben, F.R.S. ; Dr. R. R. Kuczynski ; Mr. E. M. H. Lloyd ; Mr. T. H. Marshall ; Lady (Rhys) Williams ; and Prof. James Young, F.R.C.S.

The full-time research secretary will be Mr. D. V. Glass, author of "The Struggle for Population," and the hon. secretary, Dr. C. P. Blacker. Inquiries should be addressed to the secretary of the Population Investigation Committee, 69, Eccleston-square, London, S.W.1.

THE SERVICES

ROYAL NAVAL MEDICAL SERVICE

Surg. Capt. E. St. G. S. Goodwin to *Nelson*, and as F.M.O. and Specialist in Hygiene.

Surg. Comdr. J. C. Souter to *Drake*.

Surg. Lt. L. Merrill to *Scarab*.

ROYAL NAVAL VOLUNTEER RESERVE

Surg. Lt.-Comdr. D. R. Goodfellow to *Courageous*.

Surg. Lt.-Comdr. J. F. Corr transferred from list 2 of the Severn Div. to list 2 of the Mersey Div.

Surg. Lts. K. E. L. Yuill transferred from list 2 of the Severn Div. to list 2 of the Sussex Div.; R. H. Longmoor promoted to Surg. Lt.-Comdr.; and K. E. O. Ringdahl to *Pembroke* for R.N.B.

Proby. Surg. Lt. W. S. Parker promoted to Surg. Lt.

Proby. Surg. Sub-Lt. L. Foster to *Ramillies*.

J. L. M. Wood entered as Proby. Surg. Lt.

ARMY MEDICAL SERVICES

Col. H. T. Bates, O.B.E., T.D., M.B., Terr. Army, is apptd. Hon. Physician to the King, vice Col. L. D. Bailey, C.B., M.C., T.D., Terr. Army, who has retired.

Col. W. R. Reid, D.S.O., retires on ret. pay, and is granted the hon. rank of Brig.

Col. F. A. McCammon, O.B.E., M.C., late R.A.M.C., having attained the age for retirement, is placed on ret. pay.

Lt.-Col. L. Murphy, D.S.O., from R.A.M.C., to be Col.

Col. F. A. McCammon, Assistant Director of Medical Services in Northern Ireland, has been over 30 years in the R.A.M.C., was an acting lieutenant-colonel in France, and commanded the 11th Convalescent Depôt. Colonel L. Murphy is serving at Bangalore, and joined the R.A.M.C. in 1908. He was in Mesopotamia, and was three times mentioned in dispatches.

ROYAL ARMY MEDICAL CORPS

Maj. H. G. Peake to be Lt.-Col.

TERRITORIAL ARMY

Lts. F. N. N. Roberts, J. L. Warner, J. L. Swanston, and J. G. Scott to be Capts.

G. D. Stilwell (late Offr. Cadet, Univ. of Lond. Contgt. (Med. Unit), Sen. Div., O.T.C.) to be Lt.

TERRITORIAL ARMY RESERVE OF OFFICERS

Capt. W. H. Dowell, from Active List, to be Capt.

ROYAL AIR FORCE

Squadron Leader P. B. L. Potter to R.A.F. Hospital, Aden, for duty as medical officer.

Flight Lts. C. G. Harold to Aircraft Park, Lahore, India; A. Sheehan to No. 2 (Indian Wing) Station, Risalpur, India.

Dental Branch.—Flying Offrs. C. H. Beamish and E. Martin to No. 1 School of Technical Training (Apprentices), Halton; L. C. Bellsham-Revell to Air Armament School, Eastchurch; and A. C. Wilkie to Home Aircraft Depôt, Henlow. Flight Lt. K. G. Swiss to R.A.F. General Hospital, Hinaidi, Iraq.

INDIAN MEDICAL SERVICE

Lt.-Col. K. Comyn, R.A.M.C., appointed officiating Assistant Director, Eastern Command Headquarters in place of Lt.-Col. J. J. D. Roche, who has vacated.

Majs. to be Lt.-Cols.: J. S. Galvin, A. M. V. Hesterlow, and J. R. Kochhar.

Capt. J. D. Gray resigns his commn.

Indian Medical Department.—Lt. (Sen. Asst. Surg.) C. P. V. Shunker retires.

COLONIAL MEDICAL SERVICE

Dr. D. K. Cowan has been appointed Medical Officer, Falkland Islands; Miss F. A. Craig, M.B., Ch.B., Dr. T. A. Divine, and Dr. A. Marshall have been appointed Medical Officers, Malaya; Dr. G. F. Murray, Medical Officer, Uganda; and Dr. W. Serle, Medical Officer, West Africa. Dr. C. E. Bevan becomes District Medical Officer, Cyprus; and Dr. W. J. McClintock, Assistant Director of Medical Services, Gold Coast.

Medical Diary

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

TUESDAY, Nov. 17th.

General Meeting of Fellows. 5.30 P.M.

Pathology. 8 P.M. for 8.30 P.M. (Pathological Department, St. Bartholomew's Hospital, E.C.), Mervyn Gordon: 1. Elementary Bodies. G. A. Harrison and H. E. Archer: 2. Application to Clinical Pathology of (*a*) the Reversion Spectroscope, (*b*) the Lovibond Colorimeter. L. P. Garrod: 3. Bacterium Melaninogenicum. 4. Giant Colonies of *S. actinomyces*. A. W. Spence: 5. Inhibition of Thyrotropic Action of Pituitary by Anti-thyrotropic Serum. A. H. T. Robb-Smith: 6. Experiments on the Nature of the Pulmonary Alveolar Lining and the Alveolar Phagocyte. 7. Specimens from Cases of Reticulo-sarcoma. R. Bodley Scott and A. H. T. Robb-Smith: 8. Case of Lymphoid Follicular Reticulosis. 9. Case of Marchiafava-Micheli Disease. R. G. Macfarlane: 10. Experiments on Clot Retraction. 11. Qualitative Changes in Blood Proteins after Operation. H. A. Magnus: 12. Plasmocytoma of Sacrum. 13. Adamantinoma of Pituitary. 14. Multiple Necrosis of Spleen. 15. Recent Additions to the Museum. G. Hadfield: 16. Uses of "Polaroid." in Microscopy. R. Bodley Scott: 17. Sternal Puncture Preparations. R. Klaber: 18. Unusual Skin Sections.

THURSDAY.

Dermatology. 5 P.M. (Cases at 4 P.M.) Dr. H. W. Barber and Dr. P. M. F. Bishop: 1. Keratoderma Climactericum (Haxthausen) Treated with Œstrin. Dr. H. Semon: 2. Pseudo-pelade. 3. Dermatomyositis. Dr. P. R. Evans (introduced by Dr. F. Parkes Weber): 4. Dermatomyositis. Dr. F. Parkes Weber and Dr. W. Freudenthal: 5. Glomus Tumour (Masson). Dr. J. H. Twiston Davies: 6. Lymphangioma. Mr. H. Corsi: 7. Loss of Nails in Lichen Planus. Dr. G. Bamber: 8. Granuloma Annulare. Dr. R. T. Brain: 9. Keratosis Punctata. 10. Pseudoxanthoma Elasticum. Dr. J. E. M. Wigley: 11. Pityriasis Rubra Pilaris. Dr. A. D. K. Peters: 12. Angioma Serpiginosum.

Neurology. 8.30 P.M. Dr. D. E. Denny-Brown: The Experimental Production of Spasticity. Dr. J. H. Hunt: Raynaud's Phenomenon in Workmen Using Vibrating Tools.

FRIDAY.

Physical Medicine. 5 P.M. Dr. E. P. Cumberbatch and Dr. H. J. Taylor: Short-wave Therapy. Sir Leonard Hill, F.R.S., and Dr. H. J. Taylor: Demonstration of Physiological Action. Dr. C. B. Heald, Dr. Justina Wilson, Dr. Albert Eidinow, and Dr. P. Bauwens will also speak.

Obstetrics and Gynæcology. 8 P.M. Prof. E. C. Dodds and Dr. H. Gardiner-Hill: The Present Position of Hormones in Obstetrics and Gynæcology. Dr. P. M. F. Bishop, Mr. T. N. A. Jeffcoate, and Mr. T. N. MacGregor will also speak.

Radiology. 8.15 P.M. Prof. Hans Holfelder: The Management of Advanced Malignancies. Dr. N. S. Finzi and Dr. J. Struthers Fulton will also speak.

BRITISH INSTITUTE OF RADIOLOGY, 32, Welbeck-street, W.

Medical Section.

FRIDAY, Nov. 20th.—11 A.M., Visit to the X Ray Department of the Brompton Hospital for Consumption, S.W. 5 P.M., Case Demonstration and Discussion.

ROYAL SOCIETY OF TROPICAL MEDICINE AND HYGIENE.

THURSDAY, Nov. 19th.—8.15 P.M. (Hospital for Tropical Diseases, Gordon-street, W.C.), Dr. G. Carmichael Low, Prof. R. T. Leiper, F.R.S., Dr. Philip Manson-Bahr, Major H. C. Brown, Dr. C. C. Chesterman, and Dr. N. Hamilton Fairley: Demonstrations.

ROYAL MICROSCOPICAL SOCIETY.

WEDNESDAY, Nov. 18th.—5.30 P.M. (B.M.A. House, Tavistock-square, W.C.), Mr. J. E. Barnard, F.R.S., and Mr. F. V. Welch: Microscopy with Ultra-violet Light—a Simplification of Method.

SOCIETY OF MEDICAL OFFICERS OF HEALTH, 1, Thornhaugh-street, W.C.

THURSDAY, Nov. 19th.—11 A.M., Annual Conference of the Central Council for Health Education.

TUBERCULOSIS ASSOCIATION.

FRIDAY, Nov. 20th.—5.15 P.M. (Manson House, 26, Portland-place, W.), Dr. S. Roodhouse Gloyne: From Consumption to Tuberculosis—A Study of the Disease, Past and Present. (Presidential Address.) 8.15 P.M., Mr. G. A. Mason and Dr. J. L. Livingstone: The Treatment of Pulmonary Tuberculosis by Thoracoplasty.

EUGENICS SOCIETY.

TUESDAY, Nov. 17th.—5.15 P.M. (Rooms of the Linnean Society, Burlington House, W.), Mr. W. T. J. Gun: The Heredity of the Royal Caste.

HUNTERIAN SOCIETY.
MONDAY, Nov. 16th.—9 P.M. (Cutlers' Hall, Warwick-lane, E.C.), Dr. G. Roche Lynch, Canon Anson, Mr. Gilbert Ryle, Sir Walter Langdon-Brown, and Dr. C. Killick Millard: That the Practice of Voluntary Euthanasia would be Unjustifiable.

CHELSEA CLINICAL SOCIETY.
TUESDAY, Nov. 17th.—8.30 P.M. (Hotel Rembrandt, Thurloe-place, S.W.), Mr. H. J. Barton-Chapple, B.Sc.: Television.

MEDICAL SOCIETY OF LONDON, 11, Chandos-street, W.
THURSDAY, Nov. 19th.—5 P.M., Sir Robert McCarrison: Adventures in Research. David Lloyd Roberts lecture.)

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

UNIVERSITY OF LONDON.
MONDAY, Nov. 16th.—5 P.M. (University College, W.C.), Dr. Phyllis Tookey Kerridge: Physiology of Hearing and Speech. (First of four lectures.)

CHADWICK PUBLIC LECTURE.
FRIDAY, Nov. 20th.—8 P.M. (Town Hall, Gateshead), Mr. Lionel Pearson, F.R.I.B.A.: Modern Hospital Construction.

INSTITUTE OF HYGIENE, 28, Portland-place, W.
WEDNESDAY, Nov. 18th.—3.30 P.M., Dr. Macdonald Critchley: Climate and the Nervous System.

BRITISH POSTGRADUATE MEDICAL SCHOOL, Ducane-road, W.
MONDAY, Nov. 16th.—2.15 P.M., Dr. Duncan White: Radiological Demonstration. 2.30 P.M., Dr. R. D. Lawrence: Diabetes and Diseases of Pancreas.
TUESDAY.—2 P.M., Prof. E. H. Kettle, F.R.S.: Pathological Demonstration.
WEDNESDAY.—Noon, clinical and pathological conference (medical). 2.30 P.M., clinical and pathological conference (surgical). 4.30 P.M., Prof. S. P. Bedson, F.R.S.: Virus Diseases.
THURSDAY.—3.30 P.M., Mr. Eardley Holland: Hæmorrhage of Late Pregnancy.
FRIDAY.—2 P.M., operative obstetrics. 2.30 P.M., Prof. John Fraser: Acute Surgical Infections of Bone. 3 P.M., department of gynæcology, pathological demonstration.
Daily, 10 A.M. to 4 P.M., medical clinics, surgical clinics or operations, obstetrical and gynæcological clinics or operations.

WEST LONDON HOSPITAL POST-GRADUATE COLLEGE, Hammersmith, W.
MONDAY, Nov. 16th.—10 A.M., skin clinic. 11 A.M., surgical wards. 2 P.M., operations, surgical and gynæcological wards, medical, surgical, and gynæcological clinics. 4.15 P.M., Mr. Green-Armytage: Salpingograms in Diagnosis and Prognosis.
TUESDAY.—10 A.M., medical wards. 11 A.M., surgical wards. 2 P.M., operations, medical, surgical and throat clinics.
WEDNESDAY.—10 A.M., children's ward and clinic. 11 A.M., medical wards. 2 P.M., gynæcological operations, medical, surgical, and eye clinics.
THURSDAY.—10 A.M., neurological and gynæcological clinics. Noon, fracture clinic. 2 P.M., operation, medical, surgical, genito-urinary, and eye clinics. 4.15 P.M., venereal diseases.
FRIDAY.—10 A.M., medical wards, skin clinic. Noon, lecture on treatment. 2 P.M., operations, medical, surgical, and throat clinics. 4.15 P.M., Mr. Grant Batchelor: lecture.
SATURDAY.—10 A.M., children's and surgical clinics. 11 A.M., medical wards.
The lectures at 4.15 P.M. are open to all medical practitioners without fee.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.
MONDAY, Nov. 16th, to SUNDAY, Nov. 22nd.—ST. JOHN'S HOSPITAL, Leicester-square, W.C., afternoon course in dermatology.—INFANTS HOSPITAL, Vincent-square, S.W., Sat. and Sun., course in children's diseases.

NATIONAL HOSPITAL, Queen-square, W.C.
MONDAY, Nov. 16th.—3.30 P.M., Dr. Hinds Howell: The Meninges and Cerebro-spinal Fluid.
TUESDAY.—3.30 P.M., Dr. Critchley: Aphasia, Apraxia, &c.
WEDNESDAY.—3.30 P.M., Dr. Kinnier Wilson: Clinical Demonstration.
THURSDAY.—3.30 P.M., Dr. Riddoch: Epilepsy and its Variants.
FRIDAY.—3.30 P.M., Dr. Purdon Martin: The Cranial Nerves.
Out-patient clinic daily at 2 P.M.

LONDON SCHOOL OF DERMATOLOGY, 5, Lisle-street, W.C.
TUESDAY, Nov. 17th.—5 P.M., Dr. W. N. Goldsmith: Infantile Eczema and Papular Urticaria.
WEDNESDAY.—5 P.M., Dr. I. Muende: Histopathology of New Growths of the Skin. (Chesterfield lectures.)

HOSPITAL FOR SICK CHILDREN Great Ormond-street, W.C.
WEDNESDAY, Nov. 18th.—2 P.M., Dr. R. S. Frew: Coeliac Disease. 3 P.M., Dr. R. T. Brain: Skin Diseases of Infancy.
Out-patient clinics daily at 10 A.M. and ward visits at 2 P.M.

CENTRAL LONDON THROAT, NOSE, AND EAR HOSPITAL, Gray's Inn-road, W.C.
FRIDAY, Nov. 20th.—4 P.M., Mr. A. Lowndes Yates: The Treatment of Nasal Catarrh.

SOUTH-WEST LONDON POST-GRADUATE ASSOCIATION.
WEDNESDAY, Nov. 18th.—4 P.M. (St. James's Hospital Ouseley-road, S.W.), Mr. W. C. Gissane: Traumatic, Surgery.

HAMPSTEAD GENERAL AND NORTH-WEST LONDON HOSPITAL.
WEDNESDAY, Nov. 18th.—4 P.M., Dr. T. F. Cotton: Heart Failure and its Treatment.

ST. MARY'S HOSPITAL, W.
THURSDAY, Nov. 19th.—5 P.M., Dr. G. O. Barber: Preventive Medicine and its Place with the General Practitioner. (General Practice VII.)

ST. JOHN CLINIC AND INSTITUTE OF PHYSICAL MEDICINE, Ranelagh-road, S.W.
FRIDAY, Nov. 20th.—Dr. A. Cawadias: The Rheumatic Diseases in Relation to Endocrine and Metabolic Disturbances.

ST. PAUL'S HOSPITAL, Endell-street, W.C.
WEDNESDAY, Nov. 18th.—4.30 P.M., Mr. Stanford Cade: Radium in Carcinoma of the Prostate.

MANCHESTER ROYAL INFIRMARY.
TUESDAY, Nov. 17th.—4.15 P.M., Dr. William Brockbank: Pulmonary Suppuration.
FRIDAY, Nov. 20th.—4.15 P.M., Mr. J. P. Buckley: Demonstration of Surgical Cases.

ANCOATS HOSPITAL, Manchester.
THURSDAY, Nov. 19th.—4.15 P.M., Dr. Bailey: Anomalies of Menstruation.

MANCHESTER HOSPITAL FOR CONSUMPTION, Deansgate.
WEDNESDAY, Nov. 18th.—4.30 P.M., Mr. E. S. Burt Hamilton: Lupus of the Nose and Throat.

LEEDS GENERAL INFIRMARY.
TUESDAY, Nov. 17th.—3.30 P.M., Mr. Black: Exophthalmos.

LEEDS PUBLIC DISPENSARY.
WEDNESDAY, Nov. 18th.—4 P.M., Mr. A. D. Sharp: Demonstration of Tonsil Removal by Dissection.

GLASGOW POST-GRADUATE MEDICAL ASSOCIATION.
WEDNESDAY, Nov. 18th.—4.15 P.M. (Royal Hospital for Sick Children), Prof. G. B. Fleming: The Factors Influencing Growth and Development in Infancy and Childhood.

Births, Marriages, and Deaths

BIRTHS

ANDREWS.—On Oct. 31st, at Lyme Regis, the wife of Dr. Ronald Andrews, of a son.
BLACK.—On Oct. 31st, the wife of Dr. Charles Black, of Brighton, of a son.
BUNCOMBE.—On Nov. 3rd, at Norwich, the wife of Dr. G. H. Buncombe, of Gorleston, of a daughter.
GIMBLETT.—On Nov. 4th, at Welbeck-street, the wife of Mr. Charles Leonard Gimblett, F.R.C.S. Eng., of Devonshire-place, W., of a son.
MOORE.—On Nov. 4th, at Beckenham, the wife of Dr. J. K. Moore, of a daughter.
MORLEY.—On Nov. 5th, at Welbeck-street, W., the wife of Dr. Henry Seaward Morley, of Midhurst, Sussex, of a son.
O'REGAN.—On Nov. 7th, at Devonshire-place, W., the wife of Dr. M. O'Regan, of a son.
SPOOR.—On Nov. 8th, at the Middlesex Hospital, W., the wife of Dr. W. H. Spoor, Downderry, Cornwall, of a daughter.
WILDE.—On Nov. 8th, at Epsom, the wife of Dr. O. G. Wilde, of a son.
WILLES.—On Oct. 31st, the wife of Surg. Lt.-Commander Charles F. Willes, R.N., retd., of Abbots Leigh, near Bristol, of a son.
WYLLIE.—On Nov. 3rd, at Bentinck-street, the wife of Dr. H. A. Wyllie, of Portland-place, of a son.

MARRIAGES

RIEKIE—SMITH.—On Oct. 31st, at St. Peter's, Vere-street, London, Cecil Arthur Riekie to Beatrice Gwendoline Smith, F.R.C.S.

DEATHS

BERRY.—On Nov. 1st, at Zurich, Thomas Percival Berry, M.D. Lond., late chief medical officer, G.W.R. Medical Fund (Swindon), aged 61.
BLENKINSOP.—On Nov. 3rd, at Frensham, Surrey, Major-General Sir Alfred Percy Blenkinsop, K.C.B., C.M.G., M.R.C.S. Eng., aged 71.
ELLIOT.—On Nov. 9th, at Barnet, Robert Henry Elliot, M.D. Lond., F.R.C.S. Eng., D.P.H., lieut-colonel, I.M.S. retd.
HAWKES.—On Nov. 6th, at Wallasey, James Leonard Hawkes, M.B. Manch., M.D. Liverp.
MACDONALD.—On Nov. 6th, at All Saints' Hospital, London, Herman Arthur Macdonald, M.B.E., M.D. Edin., B.Sc., late of Dover and Birkenhead.
PENMAN.—On Nov. 7th, at Wibsey, Bradford, Yorkshire, David Penman, M.B. Glasg.
SADLER.—On Nov. 7th, at Barnsley, Yorkshire, Francis Joseph Sadler, M.D. Oxon., aged 69.
WEBSTER.—On Nov. 5th, at Toronto, Prof. Albert Edward Webster, M.D., M.D.S., LL.B., honorary dean, Faculty of Dentistry, University of Toronto.
WILLOUGHBY.—On Nov. 4th, at St. Bartholomew's Hospital E.C., W. M. Willoughby, M.D. Camb., D.P.H., medic officer of health for the City of London.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths

NOTES, COMMENTS, AND ABSTRACTS

MEDICAL RELIEF FOR SPAIN

THE two ambulance units sent to Spain from this country are in urgent need of support. Their organisers have gone ahead with their work—for it clearly cannot wait—and have counted on the British public to supply the means. There can be few readers of the newspapers who have not felt some wish to mitigate the distresses of the Spanish people, and we take this opportunity of stating once more that subscriptions will be gratefully received by the Spanish Medical Aid Committee (24, New Oxford-street, London, W.C.1) and by the Scottish Ambulance Unit for Spain (5, Cleveden-road, Glasgow). Relief funds are also being distributed through the International Red Cross, and money for this purpose may be sent to the British Red Cross Society (14, Grosvenor-crescent, S.W.). A further appeal reaches us from the Catholic Bishops' Committee for the Relief of Spanish Distress (38, Eccleston-square, S.W.1) who have already sent out a motor ambulance and lorry with equipment for operations. "The state of the wounded," they say, "is appalling; and we cannot believe that our fellow-countrymen, whatever their creed, can be indifferent to the call of mercy."

A MUSEUM OF ELECTROPATHOLOGY

THE President of the Austrian State, Wilhelm Miklas, presided at the inauguration festival on Oct. 29th of Prof. Stefan Jellinek's museum, and those present included medical men from England, France, Germany, Czechoslovakia, Poland, Japan, and other countries, together with representatives of the services and of engineers and workmen. The working electricians of Vienna had collected a thousand shillings and presented them to Prof. Jellinek in appreciation of his work for their industry.

The museum, which was briefly described in our issue of April 4th last, is original in type, and shows the practical application of electropathology to daily life. For example, there are models and drawings illustrating how treatment should be given to the victim of electric shock, how the hygienist should prevent such an accident, and how the expert witness can judge whether the accident was due to murder, suicide, incendiarism, or lightning. For the technologist and engineer, the problem of the construction and danger of the ordinary electrical lamp are considered, and electrical conductivity of various materials (notably concrete) is set forth.

The sixteen rooms comprising the museum form part of the university, and are more or less under its supervision. In 36 years' work Prof. Jellinek has brought together a collection of specimens unique and invaluable. A large section is devoted to industrial accidents and their treatment, and the value of lumbar puncture is emphasised by a model showing the needle in situ. Other specimens illustrate his theory of electricity, emphasising its mechanical action as of prime importance. Not the least interesting exhibits, especially from the point of view of the medical jurist, are the markings of the electric discharge, both on organic substances—such as muscle-fibre, in which the presence of electricity was proved by a spiral marking—and in inorganic material. An example of this latter was an iron portion of an aeroplane which formed part of a machine which had come down in flames. The catastrophe was attributed to the fault of the pilot, but the microscope revealed the typical spiral marking of the electrical current and the man's innocence was established.

In addition to the museum rooms, there are also a lecture theatre, a medical and technical laboratory, and an ambulance room for casualties. One room which deserves special attention is that containing over a hundred water-colour drawings of specimens, and over a hundred articles of everyday life, illustrating what can be termed almost a new science, "Spurenkunde der Elektrizität," on which Prof. Jellinek lectured before the Royal Society of Edinburgh last July. This collection of thousands of specimens (as was said in one of the speeches), forming as it does part of the cultural work in Vienna medical school, "is an asset for the whole world."

FRESH AIR INSTEAD OF OXYGEN

MAKESHIFTS are often more exciting, nearly as efficient, and much less expensive than the genuine article. J. E. Crewe of Rochester, Minnesota, has devised a simple apparatus for supplying patients with gently moving outside air as a substitute for oxygen when this is not to be had (Jour. Amer. Med. Assoc., Oct. 3rd, 1936, p. 1125). It consists essentially of a small blower and a length of 2-inch piping. The electrically operated blower at one flexible end of the pipe is attached to a hole in a board of adjustable length which can be fitted snugly beneath a raised window. The other flexible end of the pipe can be fixed near the patient's face. The middle portion of the pipe, rigid but telescopic, is slung through a pulley to the ceiling. The apparatus has proved useful for patients in crowded and overheated rooms. If electricity is not available to operate the blower, the wind or a stream of water can be used instead.

AN OBSCURE CASE OF VERTIGO

M. L. J. has under his care an otherwise healthy woman of 54 who has intense attacks of vertigo of short duration. She has been examined by specialists who have been unable to point to the cause of these paroxysms. They do not seem due to water retention, labyrinthine disease, or Ménière's disease. There are no signs of organic nervous disorder, nor is there any neurotic tendency. No septic foci can be found and the digestive functions are good. The whole range of orthodox remedies have been tried without effect. One notable feature of the attacks is that they are induced by sudden movement of the head or by postural change; attacks have however come on in the early morning on waking. Suggestions for treatment would be welcomed from any who have met with similar cases.

AN EMANCIPIST

MANY good stories, both factual and fictitious, have been written about doctors who have become famous or notorious for extra-medical adventures or achievements. The hero of "a musical drama" in three acts recently published [1] is William Redfern, assistant surgeon on H.M.S. *Standard* in 1797, who at the age of 19 was found guilty of mutiny and sentenced by court martial to be "shot to death." His only crime was that he had dared to criticise the iniquitous conditions of life on the lower deck and, in a heated argument with his captain, had expressed sympathy with the mutineers of the *Nore*. His sentence was commuted to one of penal servitude and, after four years at Dartmoor, he was transported at his own request to New South Wales. On the voyage out on the *Minorca* he was detailed to assist the surgeon, and as a result of good work on Norfolk Island and at Sydney he was granted an absolute free pardon by the Prince Regent on the recommendation of Governor King. As an emancipist, he superintended the work of the hospital at Sydney, developed a considerable private practice, and became a person of consequence, being granted the first medical

[1] The Emancipist. An historical drama in three acts. By Major-Gen. John Macquarie Antill, C.B., C.M.G., and his daughter Rose Antill de Warren. Sydney: Angus and Robertson Ltd.; London: Williams and Norgate Ltd. 1936. Pp. 165. 3s. 6d.

diploma ever awarded in Australia. The action of this play, divided into 13 scenes, opens with the quarrel between Redfern and Captain Hawkins, and ends happily with the complete acceptance of the emancipist into the best society of New South Wales. The plot unfolds well enough but the play is rather too long, the last act especially being unduly protracted. Much of the dialogue will be perhaps too stilted and artless for the modern taste, but the story, suitably produced, might make an excellent film in the "Bounty" tradition.

PHYSIOLOGY AND PATHOLOGY OF WOMAN

WE are all liable to be asked to recommend books on various aspects of physiology and pathology suitable for the lay public. A clearly written little book for the intelligent non-medical woman seeking information, accurate but neither technical nor profound, about the workings of her own body has recently been issued.[1] The factors which constitute "femaleness" are described in the opening chapter. Menstruation in all its aspects is freely considered. The reproductive apparatus, the endocrine system, the menopause, sterility, ovulation, the "safe period," leucorrhœa, and genital cancer are other matters discussed. The author, who rightly describes himself as "an old-fashioned fellow," is, perhaps, least happy in the final chapter which deals with the sex life of woman, and which lacks the candour nowadays considered necessary for helpful discussion of this subject.

MISSION HOSPITALS IN CHINA

THESE institutions are well served by the Institute of Hospital Technology at Hankow. The institute is under the auspices of the missionary section of the Chinese Medical Association, and is housed in the Union Hospital at Hankow. Hospitals send students, men and women, for six and twelve-month courses in laboratory work, pharmacy, anæsthesia, and X ray, and, after training, these men and women go back to their own hospitals equipped to undertake much of the work which, in better staffed institutions, would be done by fully qualified doctors. The scheme, which is a great boon to understaffed hospitals, has worked well, and Miss Hilda Waddington, the dean and registrar of the institute, reports that 30 missionary societies have sent students to the institute for training.

IN the notice of the London Medical Exhibition in THE LANCET of Oct. 31st (p. 1066) the statement that Scott's Brand Emulsion of cod-liver oil contains hyposulphites of lime and soda should of course read *hypophosphites* of lime and soda.

UNWANTED INDICES to "THE LANCET."—Any reader who has an unbound copy not in use of the index for any of the years 1932, 1933, 1934 (Vols. I. and II.), and 1935 (Vol. I.) would greatly oblige by posting the same to the Editor of THE LANCET, 7, Adam-street, Adelphi, London, W.C.2.

---

[1] The Woman Asks the Doctor. By Emil Novak, M.D., D.Sc. London: Christophers. 1936. Pp. 191. 5s.

Vacancies

For further information refer to the advertisement columns

All Saints' Hospital, Austral-street, West-square, S.E.—Hon. Surg. Reg. Also Res. H.S., at rate of £100.

Altrincham General Hospital.—Jun. H.S., at rate of £120.

Ayr County Council.—Obstetrician, £700.

Bath, Royal United Hospital.—Res. O., £150.

Birmingham General Hospital.—Res. Surg. O. Also Med. Reg. and Res. M.O., £180 and £155 respectively.

Birmingham, Selly Oak Hospital.—Res. Ear, Nose, and Throat Surgeon, £700. Also Jun. M.O.'s, each at rate of £200.

Brighton, Royal Alexandra Hospital for Sick Children.—H.S., £120.

Brighton, Royal Sussex County Hospital.—H.S. and Cas. H.S., £150 and £120 respectively. Also Hon. Med. Reg.

Cardiff Royal Infirmary, &c.—Hon. Dermatologist and M.O. to V.D. Centre, £250.

Carlisle, Cumberland Infirmary.—Hon. Surgeon.

City of London Hospital for Diseases of the Heart and Lungs, Victoria Park, E.—Res. M.O., £350. Also H.P., at rate of £100.

Dudley, Guest Hospital.—Hon. Asst. Surgeon to Ear, Nose, and Throat Dept.

Eastbourne, Royal Eye Hospital, Pevensey-road.—H.S., £100.

East Ham Memorial Hospital, Shrewsbury-road, E.—Hon. Dental Surgeon. Also H.S. to Spec. Depts., and Cas. O., at rate of £120.

Edgware, Redhill County Hospital.—Jun. Res. Asst. M.O., at rate of £250.

Elizabeth Garrett Anderson Hospital, Euston-road, N.W.—H.P., First and Second H.S., also Obstet. Asst., each at rate of £50.

Evelina Hospital for Sick Children, Southwark Bridge-road, S.E.—H.S., at rate of £120.

Farringdon General Dispensary.—Hon. Surgeon for Throat, Nose, and Ear Clinic.

Gloucestershire County Council.—M.O., £800.

Gloucestershire Royal Infirmary, &c.—H.P., at rate of £150.

Guy's Hospital, S.E.—Clin. Asst. to Radiology Dept., £250.

Halifax County Borough.—Consultant Obstetrician, 5 gns. and 4 gns.

Hampstead General and N.W. London Hospital, Haverstock Hill, N.W.—Cas. M.O. and Cas. Surg. O. for Out-patient Dept., each at rate of £100.

Hendon Borough.—Asst. M.O.H. and Asst. School M.O., £600.

Hospital for Sick Children, Great Ormond-street, W.C.—Surgical Reg., £200. Res. H.P. and Res. H.S., each at rate of £100. Also Res. Anæsthetist Reg., at rate of £150.

Hospital of St. John and St. Elizabeth, 60, Grove End-road, N.W.—Anæsthetist.

Huddersfield Royal Infirmary.—H.S. to Eye, Ear, and Obstet. Dept., at rate of £150.

Isleworth, West Middlesex County Hospital.—Asst. M.O., £400.

Lancaster Royal Infirmary.—Jun. H.S., at rate of £130.

Leeds Education Committee.—Asst. School M.O., £500.

London Homœopathic Hospital, Great Ormond-street, W.C.—H.S. Also Gynæcological H.S., each at rate of £100.

London Hospital, E.—Surg. First Asst. and Reg., £300. Also Asst. Surgeon.

London (R.F.H.) School of Medicine for Women, 8, Hunter-street, W.C.—Demonstrator in Physiology. Also Curator of the Anatomical Museum.

London University.—Geoffrey Duveen Studentship, £450.

Manchester Royal Eye Hospital.—Jun. H.S., £120.

Manor House Hospital, Golders Green, N.W.—Jun. M.O., £200.

Margate Royal Sea-Bathing Hospital.—H.S., at rate of £200.

Middlesbrough, North Riding Infirmary.—Sen. H.S., £200.

Mildmay Mission Hospital, Austin-street, Bethnal Green, E.—Asst. Cas. O., at rate of £125.

Miller General Hospital, Greenwich-road, S.E.—Cas. O., at rate of £150. Also two H.P.'s and H.S., each at rate of £100.

Northwood, Middlesex, Mount Vernon Hospital.—H.S., £150.

Oxford, Pembroke College.—Theodore Williams Medical Scholarship, £100.

Paddington Green Children's Hospital, W.—Hon. Phys. to Out-patients.

Preston and County of Lancaster Royal Infirmary.—Asst. Pathologist, £650.

Prince of Wales's General Hospital, N.—Hon. Clin. Assts. to Spec. Depts.

Princess Louise Kensington Hospital for Children, St. Quintin-avenue, W.—Hon. Asst. Physician.

Queen Mary's Hospital for the East End, E.—Hon. Asst. Phys. for Children's Dept. Res. M.O. and two Cas. and Out-patients O.'s, each at rate of £150. Also H.S. and H.P.'s to Spec. Depts., each at rate of £120.

Redhill, Surrey, Royal Earlswood Institution.—Jun. Asst. M.O., at rate of £250.

Rochdale Infirmary and Dispensary.—H.P., £150.

Royal Naval Medical Service.—M.O.'s.

Royal Waterloo Hospital for Children and Women, Waterloo-road, S.E.—H.S., at rate of £100. Also Hon. Clin. Asst.

St. Bartholomew's Hospital, E.C.—Chief Asst. in X Ray Diagnostic Dept., £500.

St. Mary's Hospital for Women and Children, Plaistow, E.—Hon. Asst. Physician. Also Hon. Ophthalmic Surgeon.

St. Mary's Hospital, W.—Med. Reg., £200. Also Cas. H.P., at rate of £150.

St. Peter's Hospital for Stone, Henrietta-street, W.C.—Physician. Also 4th Anæsthetist, £25.

Salisbury General Infirmary.—H.P., at rate of £125.

Sheffield Royal Hospital.—Whole-time Clin. Asst. to Ear, Nose, and Throat Dept., £300.

Southampton, Royal South Hants Hospital.—Cas. O. and two H.S.'s, each at rate of £150.

South London Hospital for Women, Clapham Common, S.W.—H.P. and H.S., each at rate of £100.

Stepney Metropolitan Borough.—M.O.H. and Chief Administrative Tuber. O., £1200.

Sunderland Royal Infirmary.—Two H.S.'s and H.P., each £120.

Tunbridge Wells, Kent and Sussex Hospital.—H.P., Sen. H.S., H.S. to Spec. Depts., and H.S. and Cas. O., each at rate of £150.

University College Hospital, W.C.—Registrar of the Royal Ear Hospital, £250.

Watford and District Peace Memorial Hospital.—H.S. and H.P., each at rate of £150.

Welwyn Garden City Urban District.—M.O.H., £800.

Western Ophthalmic Hospital, Marylebone-road, N.W.—Sen. Res. H.S. and Jun. H.S., at rate of £150 and £100 respectively.

Willesden General Hospital, Harlesden-road, N.W.—Med. Reg., at rate of £50.

The Chief Inspector of Factories announces vacancies for Certifying Factory Surgeons at Cricklade (Wilts), Dartmouth (Devon), Yealmpton (Devon), Heckington (Lincs), and Shere (Surrey).